ORDER NO. VMD9501M106

Service Manual

Panasonic VHS C
PAL

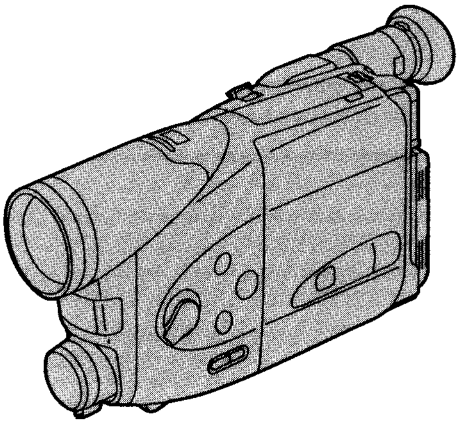
Hi-Fi HQ

VHS-C Movie

NV-R33E/B/A
NV-R330EN

DL-MECHANISM

General Description
Adjustment Procedures
Block / Schematic Diagrams
Exploded Views / Parts List



SPECIFICATIONS

ITEM	SPECIFICATION
POWER	Source: Battery Pack; 4.8 V DC AC Adaptor; 6.0 V DC Consumption; 7.2 W (Battery Pack Operation)
VIDEO RECORDING SYSTEM	4 rotary heads, helical scanning system PAL
TAPE FORMAT	VHS-C Cassette Tape (Tape width 12.7 mm)
TAPE SPEED	SP mode: 23.39 mm/s LP mode: 11.7 mm/s (NV-R33B/A, NV-R330EN) Record/Playback Time: SP: 45 min. with NV-EC45XG LP: 90 min. with NV-EC45XG (NV-R33B/A, NV-R330EN) FF/REW Time: less than 5 min. with NV-EC45XG
CAMERA	PICK-UP ELEMENT: CCD (Charge Coupled Device)
	STANDARD ILLUMINATION: 1,400 lux
	MINIMUM REQUIRED ILLUMINATION: 1 Lux (Low Light Mode)
	LENS: 10:1 Power Zoom Lens with Digital AI Auto Focus, Auto Iris, Auto Focus System, F1.8 (3.9~39 mm), Filter Diameter 43 mm
	IMAGE SENSOR: 1/3 inch CCD Image Sensor
	VIEWFINDER: 0.5 inch Electronic Viewfinder

ITEM	SPECIFICATION
VIDEO	HEADS: 4 rotary heads, 1 flying erase head
	OUTPUT: PHONO CONNECTOR; 1.0 Vp-p 75Ω unbalanced
AUDIO	HEAD: 1 Stationary head (Normal-Mono) 4 rotary heads; 2 channels (Hi-Fi Sound-Stereo)
	OUTPUT: PHONO CONNECTOR; −6 dB, 47 kΩ loaded
	INPUT: MIC IN (M3); −70 dB 4.7 kΩ or more unbalanced
WEIGHT	Approx. 760 g (without Battery Pack)
DIMENSIONS	89 (W) × 120 (H) × 255 (D) mm
STANDARD ACCESSORIES	1 pc. AC Adaptor 1 pc. Battery Pack 1 pc. Cassette Adaptor 1 pc. Shoulder Strap 1 pc. DC Input Cable 1 pc. Battery for Cassette Adaptor Operation 1 pc. AC Cable 1 pc. 21 Pin Adaptor (NV-R33E/B) 1 pc. AV Output Cable

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic

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⚠ **WARNING**
This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

INTRODUCTION

This Service Manual contains techinical information which will allow service personnels to understand and service this model.

Section 1 pressents you with some general information of features and controls, enabling you to become familiar with each function.
Section 2 contributes to your electrical adjustment as well disassemble and replacement procedures.
Section 3 contains block diagram which offers you information for checking and undrstanding each circuit. Schematic diagrams which give you much information such as waveforms, vlotage data, and so on.
Section 4 contains exploed views and parts list.

Please place orders using the parts list and not the drawing reference numbers.
If the circuit is changed or modified, this information will be followed by supplement service manual to be filed with original service manual.

NOTE:

The following items are separated from this manual.
So, please refer to each Service Manual as follows:

SEPARATED ITEMS	Order No.	REMARKS
Adjustment Procedure for Mechanism-Chassis	VMD9412M130	
Adjustment Procedure for Camera-unit	VMD9501M107	
AC ADAPTOR (VSK0317C)	VMD9501M104	

NOTE

ONLY FOR *NV-R330EN:*

There are two versions of NV-R330EN depends on countries.
One is for only Hong Kong, the other one is for all of other "EN" area.
The following table shows the differences between the versions.

Ref. No.	PART No. *(Printed model No.)*		DESCRIPTION	PCS	REMARKS
	EXCEPT HONG KONG	HONG KONG			
653(6)	VPG7822 *(NV-R330EN)*	VPG7823 *(NV-R330ENH)*	PACKING CASE	1	
655(6)	VJA0664	VJA0733	AC CORD	1	
	Regarding both of the Movie Camera units *are completly same.*				

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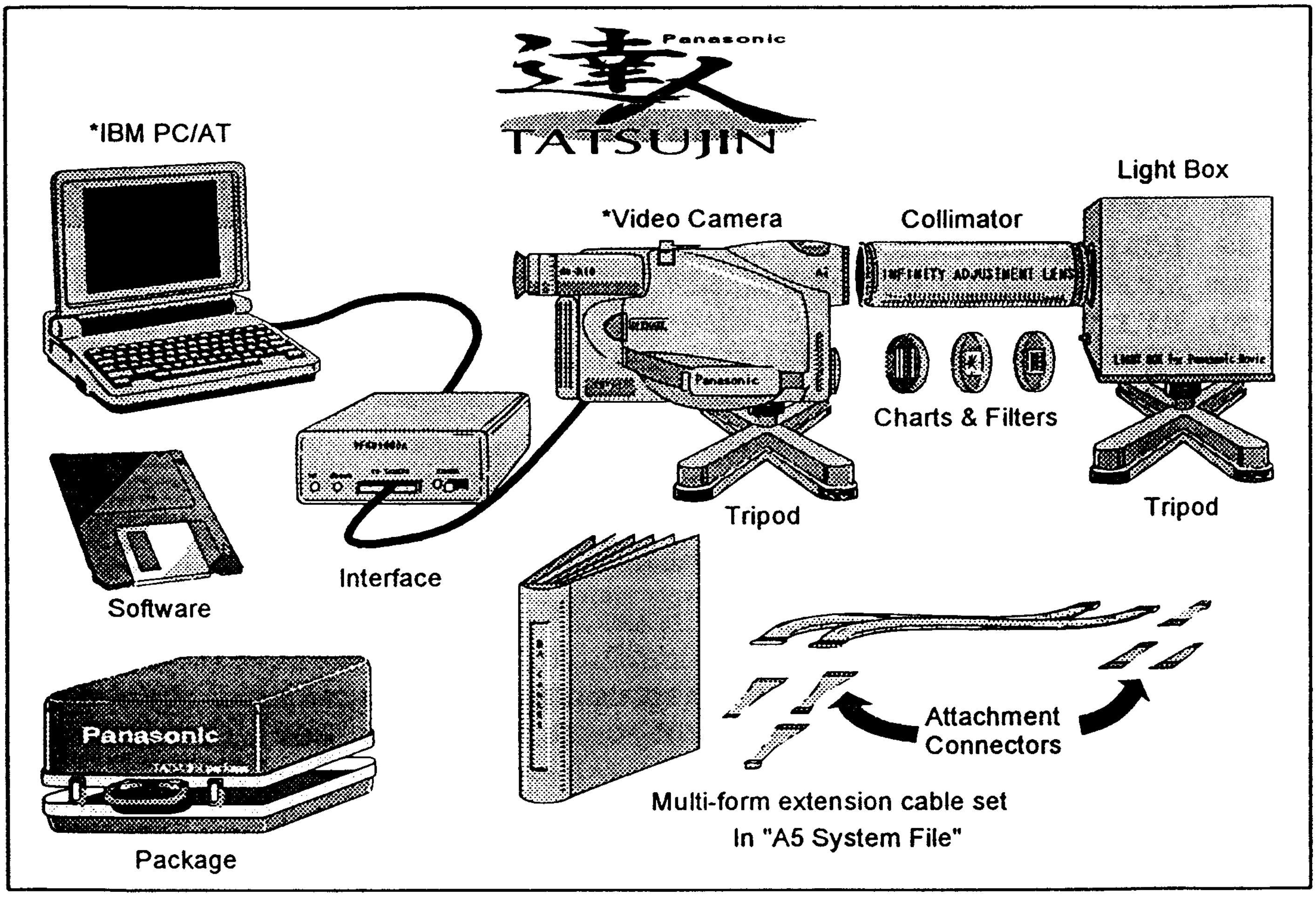
Technical Information

Subject: Introduction of new service device kit "TATSUJIN"(VED95TTJ).


Panasonic
達人
TATSUJIN
*IBM PC/AT
*Video Camera
Collimator
Light Box
INFINITY ADJUSTMENT LENS
Charts & Filters
Tripod
Tripod
Software
Interface
Package
Panasonic
Attachment Connectors
Multi-form extension cable set
In "A5 System File"

1. General Description

A new service device kit for Video Camera, *"TATSUJIN"* Kit, is now avaiable from Panasonic.
"TATSUJIN" is a Japanese word which means a specialist, expert, or master in English.
This naming was made because the kit will make you a *"TATSUJIN"* of Panasonic Video Camera servicing.
The *"TATSUJIN"* is consists of the following 3 items which are simply organized in a small package.
All of which will drastically improve your productivity of Video Camera servicing in terms of Diagnosis, Adjustment, and Confirmation.

2. PC－EVR. (Interface, Software, Connecting Cables)

It connects a Camera to your IBM PC/AT so that the adjustment and trouble-shooting can be done easily on PC screen.
The time used to taken by the camera adjustment will be reduced more than 60%. In addition, Its diagnosis support function helps you to improve the service efficiency drastically.
The conventional EVR(VFK0644) will be replaced by this new computer-aided system.

Note: *PC and *Camera are not included in the kit. The minimum requirements of the PC are 80286 CPU, 1MB RAM, and MS-DOS 3.2. For further information, please contact Video Equipment Division.

3. Optical Set. (Collimator, Charts & Filters, Light Box, Tripods)

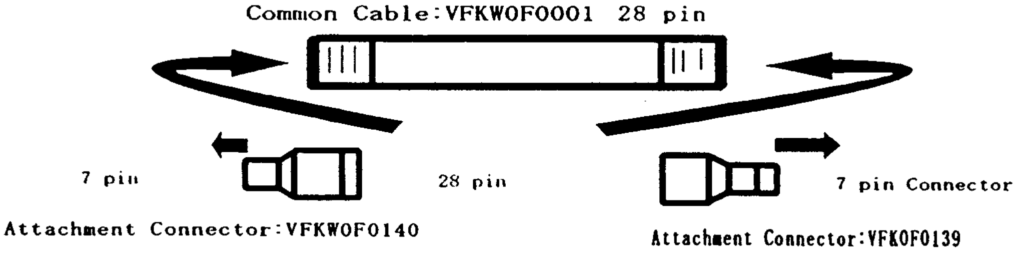
All of the opical devices which are indispensable to service a camera but used to take a huge space to set up, are now drastically shrunk into a compact "Desk-top space".
Now you can easily aim various charts, COLOR-BAR, GRAY-SCALE, HUNTING, and WHITE, by simply attaching them to the collimator which is inserted in a compact light box.
So that you do not have to worry about restricting external light and measuring the distance from the chart.

4. Multi-form Extension Cable Set.

Now you can make any kind of extension cable required, by simply changing the attachment connectors.
All of the connectors which cover all extension cables since 1990, are simply organized in a "A5 System file".
When you need a new connectot for a new model, it can be purchased at extremely low price.

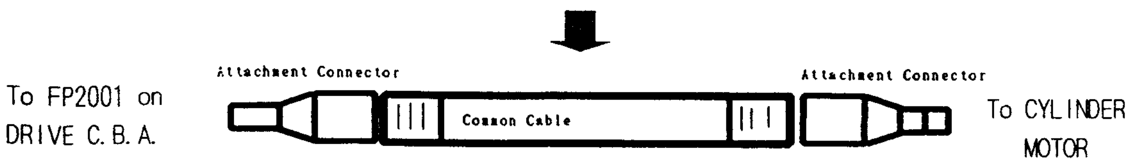
*. How to use the new style extension cable.
NOTE:This is an example for how to use new style extension cable is.
(Example)
FP2001(DRIVE C.B.A.)~ CYLINDER.

①. Attach the attachment connector (VFKW0F0139 & VFKW0F0140) to Common Cable(VFKW0F0001) as follows:
Please check the direction of conductors between attachment connector and Common Cable.


Common Cable:VFKW0F0001 28 pin
7 pin
28 pin
7 pin Connector
Attachment Connector:VFKW0F0140
Attachment Connector:VFK0F0139

This model used new extension cables between FP2001(DRIVE C.B.A.) and CYLINDER.

②. Connect the attachment connector (VFKW0F0139) to the Cylinder Motor.
③. Connect the attachment connector (VFKW0F0140) to FP2001 on DRIVE C.B.A.


Attachment Connector
Attachment Connector
To FP2001 on DRIVE C.B.A.
Common Cable
To CYLINDER MOTOR

Service Extension Cables

1-1. General Description

Use the following extension cables for checking or adjusting individual circuit bords.

Ref.	Part No.	PIN	Part Name	Connection	Q'ty	Remaks
①	VFK0727	16	Flat Cable	FP6001(MAIN·SYSCON) ~ Mech FPC	1	
②	VFK0728	9	Flat Cable	FP4001(MAIN·AUDIO) ~ A/C HEAD	1	or VFK0980
③	VFK0729	6	Flat Cable	FP6002(MAIN·SYSCON) ~ Mech. FPC	1	or VFK0978
④	VFK0839	30	Extension cable	PS1001(MAIN·POWER) ~ B1601(EVF)	1	
⑤	VFK0913	18	Flat Cable	FP701 (MAIN·LENS DRIVE) ~ LENS UNIT	1	
⑥	VFK0929	12	Flat Cable	PP201 (MAIN·SENSOR) ~ CCD	1	
⑦	VFK0949	22	Flat Cable	FP6005(MAIN·SERVO) ~ FP2003(CAPSTAN)	1	

1-2. How to use the Extension Cables

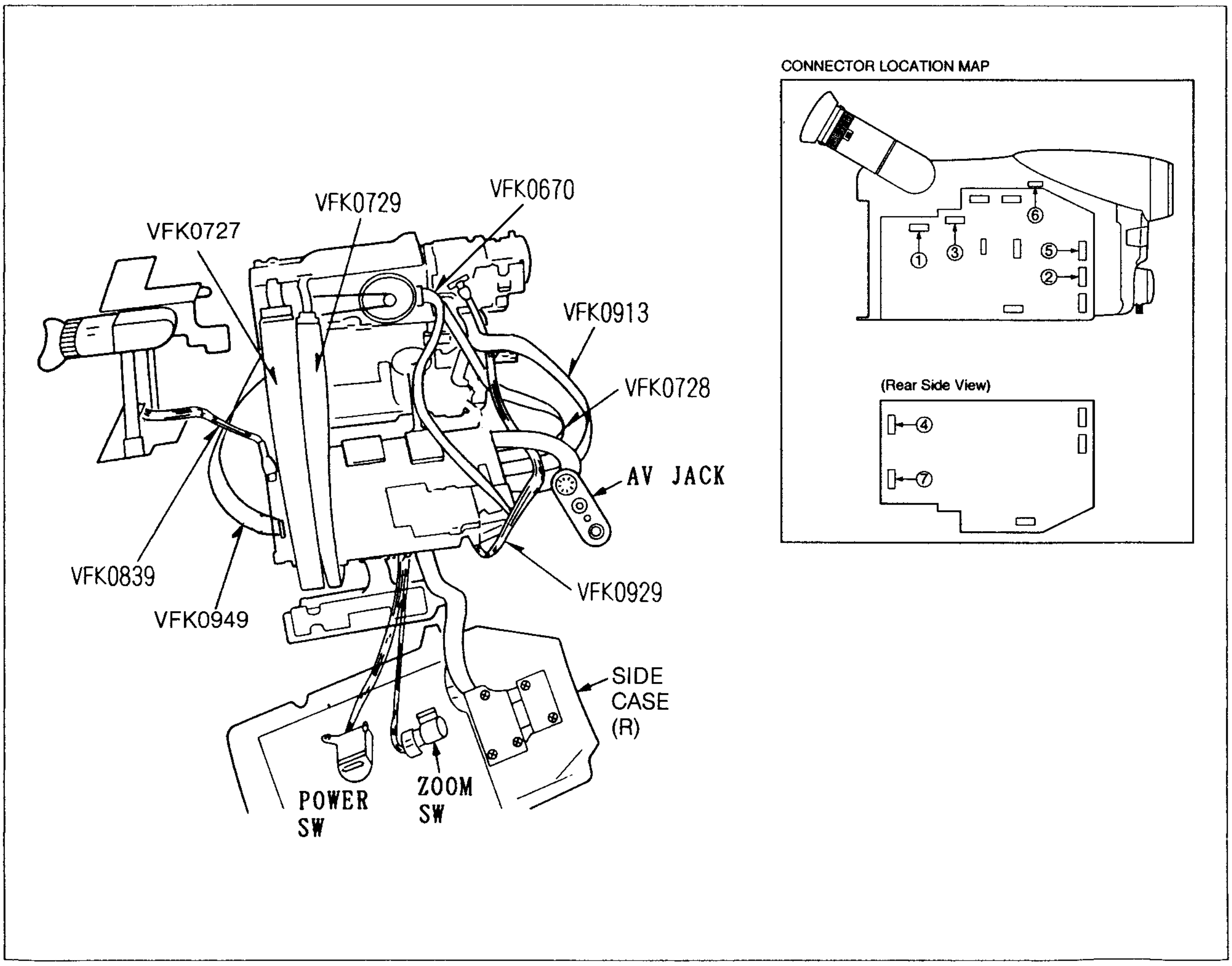

VFK0727
VFK0729
VFK0670
VFK0913
VFK0728
AV JACK
VFK0839
VFK0949
VFK0929
SIDE CASE (R)
POWER SW
ZOOM SW
CONNECTOR LOCATION MAP
①
③
⑥
⑤
②
(Rear Side View)
④
⑦

Fig. T1

Note 2:
For easy servicing, remove the 3 parts from the Side Case (L) as follows:

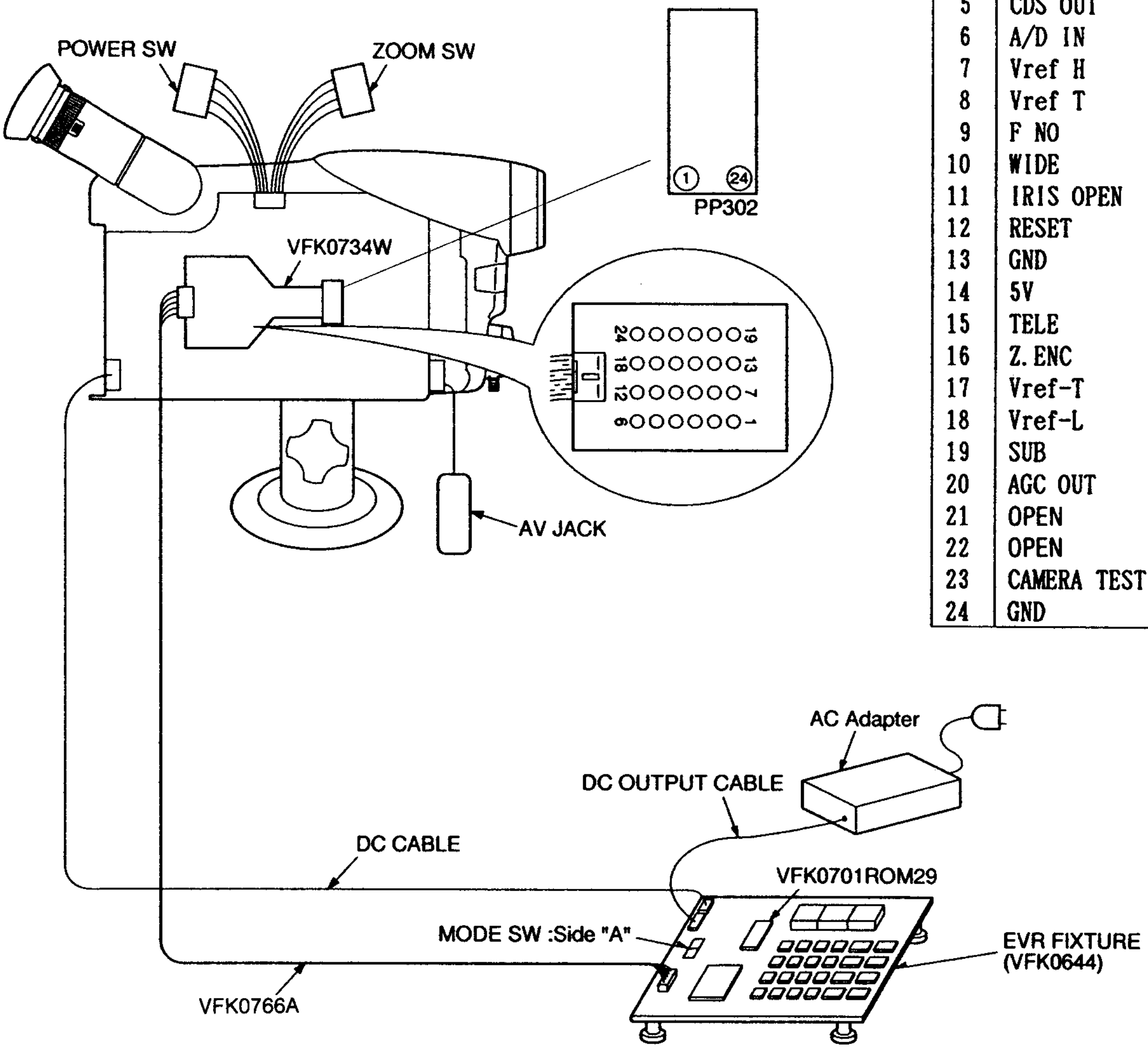
1). Zoom SW......... (Remove the 1 Screw.)
2). Power SW........ (Remove the 2 Screws.)
3). AV-Jack......... (Remove the 2 Screws.)

1−2. New ROM IC for EVR Fixture

(Effective model:NV-R33/R330series)

We are pleased to introduce the new ROM IC, VFK0701ROM29 for the EVR fixture.
This ROM IC will provide you with many advanced features such as automatic calculation.

To connect the Camera unit and EVR fixture, VFK0734W and VFK0766A are required.
To make easily servicing, you would better connect VFK0668(24pin) between PP302 and VFK0734W.


POWER SW
ZOOM SW
①
㉔
PP302
VFK0734W
24
19
18
13
12
7
6
1
AV JACK
AC Adapter
DC OUTPUT CABLE
DC CABLE
VFK0701ROM29
MODE SW :Side "A"
EVR FIXTURE
(VFK0644)
VFK0766A

PIN ARRANGEMENT OF B401

1	CAMERA CLOCK
2	SID
3	VD
4	OPEN
5	CDS OUT
6	A/D IN
7	Vref H
8	Vref T
9	F NO
10	WIDE
11	IRIS OPEN
12	RESET
13	GND
14	5V
15	TELE
16	Z.ENC
17	Vref-T
18	Vref-L
19	SUB
20	AGC OUT
21	OPEN
22	OPEN
23	CAMERA TEST
24	GND

NOTE:

*.During servicing, connection of Power SW (which is located on Side Case (L)) must be connected.

*.For easy servicing, remove the 3 parts from the SIDE CASE (L) as shown below.

1). Zoom SW.......(By removing 1 screw.)
2). Power SW......(By removing 2 screws.)
3). AV JACK.......(By removing 2 screws.)

Fig. T2

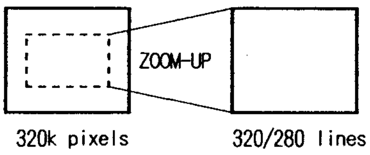
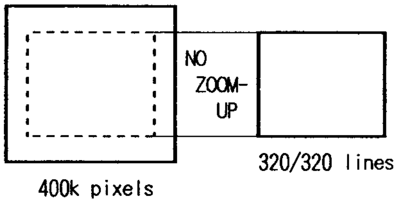
ROM ICs for EVR fixture

There are 29 kinds of ROM ICs as shown in Fig.R1. All ROM ICs have three functions as shown below.
①.General adjustment ②.Auto calculation (AWB & Colour reproduction.)③.Auto Average Data Writing.

REF. No.	ROM NUMBER	Effective System	MODE SW SIDE	Applicable models	PART NUMBER OF EVR CONNECTION CABLE
1	VFK0701ROM1	PAL/NTSC	"A" SIDE	NV-MS70E,B,A/M810EN,PX/G200PN	VFK0769(EXCEPT G200PN)
		PAL	"B" SIDE	NV-S1E,B,A/S100EN/S4F	VFK0699(ONLY G200PN)
2	VFK0701ROM2	NTSC	"A" SIDE	NV-S500PN	VFK0730
		PAL	"B" SIDE	NV-S5E,B,A,EC/S500EN	
3	VFK0701ROM3	PAL/SECAM	"A" SIDE	NV-G1E,B,A,F/G2E,B,A,F/G3E,B,A,F NV-G100EN/G200EN,MC/G300EN	VFK0699
		PAL	"B" SIDE	NV-MS95E,B,A/MS950EN	
4	VFK0701ROM4	NTSC(JAPAN)	"A" SIDE	NV-S7/S9 ("B"side: None)	VFK0766A & VFK0734W
5	VFK0701ROM5	PAL	"A" SIDE	NV-S7EG,B,A,EC/NV-S700EN	
		PAL/SECAM	"B" SIDE	NV-G101E,B,A,F/G120EN/G202E,B,A,F NV-G220EN,MC/G303E,B	VFK0699
6	VFK0701ROM6	NTSC(JAPAN)	"A" SIDE	NV-T1 ("B"side: None)	VFK0766A & VFK0734W
7	VFK0701ROM7	PAL	"A" SIDE	NV-M40E,B,A,E3,B3,A3/M3000EN,EM,EN3 NV-M3300MC	
--Discontinued(Please use VFK0701ROM10)---					
8	VFK0701ROM8	PAL/SECAM	"A" SIDE	NV-S6E,B,A,F/NV-S600EN/NV-S8E,B,A NV-S800EN	
9	VFK0701ROM9	NTSC(JAPAN)	"A" SIDE	NV-S99/S77	
10	VFK0701ROM10	PAL	"A" SIDE	NV-MS4E,B,A,E3,B3,A3/NV-M9000EN,EN3 NV-M9900MC,MC3	
			"B" SIDE	NV-M40E,B,A,E3,B3,A3/M3000EN,EM,EN3 NV-M3300MC	
11	VFK0701ROM11	NTSC	"A" SIDE	NV-G220PN	
			"B" SIDE	NV-M3000PN,PN3/M9000PN,PN3	
12	VFK0701ROM12	NTSC(JAPAN)	"A&B" SIDE	NV-3CCD1	
13	VFK0701ROM13	PAL	"A" SIDE	NV-S20E,F	
			"B" SIDE	NV-S20A,B/S250EN	
14	VFK0701ROM14	PAL	"A" SIDE	NV-S78E ("B"side: None)	
15	VFK0701ROM15	NTSC(JAPAN)	"A" SIDE	NV-CS1	
16	VFK0701ROM16	NTSC	"A" SIDE	NV-S750PN	
			"B" SIDE	NV-S250PN	
17	VFK0701ROM17	NTSC	"A" SIDE	NV-3CCD1PN	
			"B" SIDE	NV-CS1PN	
18	VFK0701ROM18	PAL	"A" SIDE	NV-CS1E,B,A,EN ("B"side: None)	
19	VFK0701ROM19	PAL	"A" SIDE	NV-R50E,B,A/R500EN,MC("B"side:None)	
20	VFK0701ROM20	NTSC	"A" SIDE	NV-R500PN	
		NTSC(JAPAN)	"B" SIDE	NV-S10/S58	
21	VFK0701ROM21	PAL	"A" SIDE	NV-S85E,B,A/S850EN/S65E	
--Discontinued(Please use VFK0701ROM22)---					
22	VFK0701ROM22	PAL	"A" SIDE	NV-R10E,B,A/R100EN/A1E,B,A,EN	
			"B" SIDE	NV-S85E,B,A/S850EN/S65E	
23	VFK0701ROM23	PAL/SECAM	"A" SIDE	NV-A1F/R10F/R200EN/R30E,B,A,F	
		NTSC	"B" SIDE	NV-A1PN/R100PN	
24	VFK0701ROM24	PAL	"A" SIDE	NV-S70E,B,A	
		NTSC	"B" SIDE	NV-R200PN/A1(NV-A1:JAPAN MODEL)	
25	VFK0701ROM25	PAL/SECAM	"A" SIDE	NV-S90E,B,A/S900EN	
26	VFK0701ROM26	NTSC(JAPAN)	"A" SIDE	NV-LC1	
27	VFK0701ROM27	NTSC(JAPAN)	"A" SIDE	NV-S100	
			"B" SIDE	NV-X100	
28	VFK0701ROM28	PAL	"A" SIDE	NV-A3E,B,A,EN	
			"B" SIDE	NV-R11E,B,A	
29	VFK0701ROM29	PAL	"A" SIDE	NV-R33E,B,A/R330EN/R55A,EE/R550EN	
		NTSC	"B" SIDE	NV-A7PN	

Fig.R1

NEW D. I. S. system
(Digital Image Stabilizer)

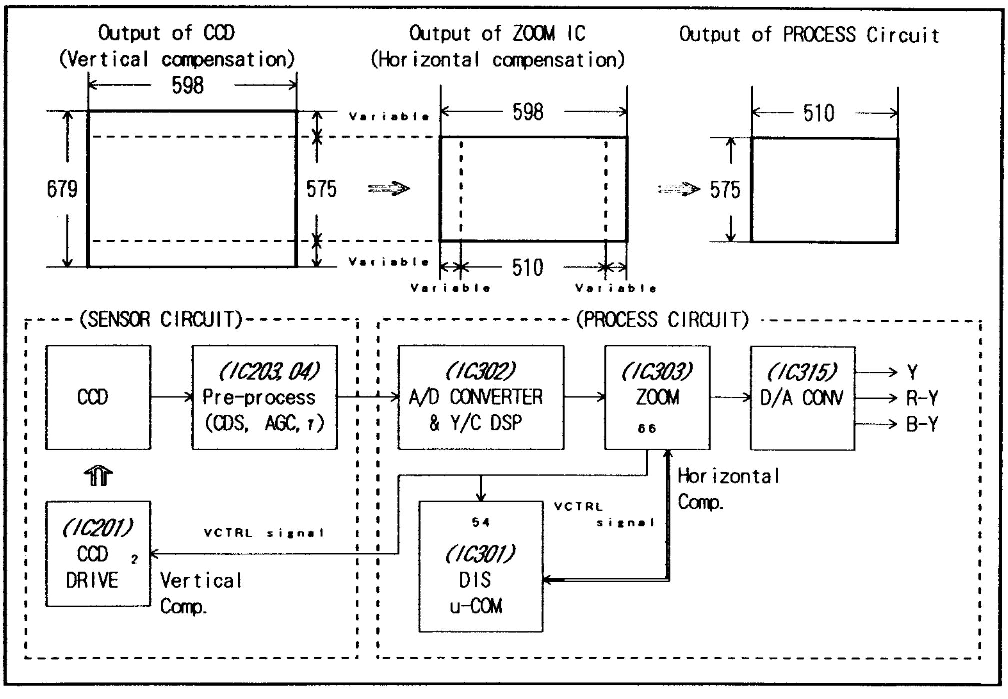
	Previous VHS-C model	NV-R33
Imagination	 ZOOM-UP 320k pixels 320/280 lines	 NO ZOOM-UP 400k pixels 320/320 lines
Effective pix.	320k pixels	400k pixels
Zoom-UP (DIS)	YES (115% Zoom-UP)	NO
Effective Picture Extraction	FIELD MEMORY (Field memory memorizes 100% of CCD output, then it is extracted only 85%.)	High density CCD image sensor + Zoom IC (CCD image sensor →Vertical extraction) (Zoom IC → Horizontal extraction)

The new VHS-C movie NV-R33series employs the new D. I. S. system. (The features are shown below.)

1). No Zoom-up operation (Picture resolution is unchanged even DIS ON/OFF.)
2). Field Memoryless (Predictive Compensation system)

HOW TO ELIMINATE HAND JITTER WITHOUT THE ZOOM-UP OPERATION AND THE FIELD MEMORY?
In the previous model, when the DIS function is activated, the field memory memorises full size information of CCD output. The area read out is 15% smaller compeared with CCD output.
Offcause, the extracted area is shifted vertically and horizontally depending on hand jitter.
Then it is enrarged to full size (1 field) information, Therefore, to achieve this system, field memory control and zoom-up operation are necessary.

The new DIS system employs high density CCD image sensor which has bigger effective area.
(Normaly, effective area and visual area of CCD image sensor are the same size.)
When the DIS function is activated, IC301(DIS-uCOM) predicts the hand jitter during signal process.
According to the hand jitter detection, IC301(DIS u-COM) controls the CCD image sensor vertically and IC303(ZOOM IC) horizontally by the VCTRL signal.
(In fact, this extractive operation is always performed, even DIS function is ON or OFF.)
Thus, this system performs the field memoryless and the no zoom-up DIS function.
The simplified block diagram for DIS system is as shown below.


Output of CCD
(Vertical compensation)
Output of ZOOM IC
(Horizontal compensation)
Output of PROCESS Circuit
598
679
575
Variable
Variable
598
510
Variable
Variable
510
575
(SENSOR CIRCUIT)
(PROCESS CIRCUIT)
CCD
(IC203, 04)
Pre-process
(CDS, AGC, γ)
(IC302)
A/D CONVERTER
& Y/C DSP
(IC303)
ZOOM
66
(IC315)
D/A CONV
Y
R-Y
B-Y
(IC201)
CCD
2
DRIVE
VCTRL signal
Vertical
Comp.
54
(IC301)
DIS
u-COM
VCTRL
signal
Horizontal
Comp.

DATA TRANSMISSION

1. General Description

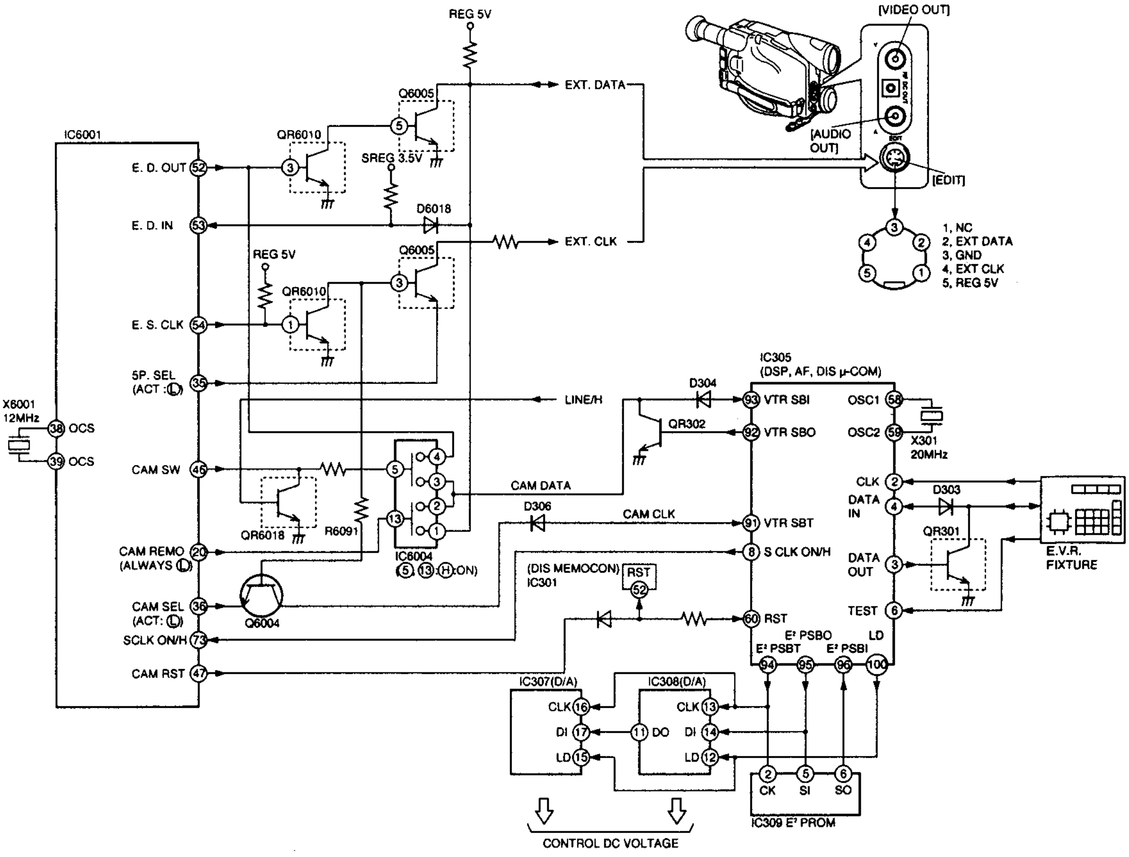
There are 3 kind of microcomputer and EDIT terminal which exchange the various data, such as Focus condition, Date time data, VCR-CAMERA switching and so on, by using the serial data line.
The microcomputors are as follws:

*. VCR side : IC6001(System control u-COM)
: IC6003(Display u-COM)
*. CAMERA side: IC305(DSP, AF DIS u-COM)

2. Circuit Description

2-1. Data transmission ① (IC6001, IC305 and EDIT terminal)

The simplified block diagram is shown below.



REG 5V
EXT. DATA
EXT. CLK
Q6005
QR6010
SREG 3.5V
D6018
IC6001
E. D. OUT (52)
E. D. IN (53)
E. S. CLK (54)
5P. SEL (ACT : Ⓛ) ㉟
X6001 12MHz
㊳ OCS
㊴ OCS
CAM SW ㊻
CAM REMO (ALWAYS Ⓛ) ⑳
CAM SEL (ACT: Ⓛ) ㊱
SCLK ON/H (73)
CAM RST ㊼
QR6018
R6091
IC6004 ⑤,⑬:Ⓗ:ON)
Q6004
LINE/H
CAM DATA
CAM CLK
D306
D304
QR302
(DIS MEMOCON) IC301
RST (52)
IC305 (DSP, AF, DIS μ-COM)
(93) VTR SBI
(92) VTR SBO
(91) VTR SBT
⑧ S CLK ON/H
(60) RST
OSC1 (58)
OSC2 (59)
X301 20MHz
CLK ②
DATA IN ④
DATA OUT ③
TEST ⑥
D303
QR301
E.V.R. FIXTURE
E^2 PSBT (94)
E^2 PSBO (95)
E^2 PSBI (96)
LD (100)
IC307(D/A)
CLK ⑯
DI ⑰
LD ⑮
IC308(D/A)
CLK ⑬
DI ⑭
LD ⑫
⑪ DO
② CK
⑤ SI
⑥ SO
IC309 E^2 PROM
CONTROL DC VOLTAGE
[VIDEO OUT]
[AUDIO OUT]
[EDIT]
1, NC
2, EXT DATA
3, GND
4, EXT CLK
5, REG 5V

IC6001
(SYSTEM CTL)
↕
EDIT
TERMINAL

- EXTERNAL SERIAL CLOCK : IC6001-(54) ⟶ QR6010(BASE)① ⟶ Q6005(BASE)③ ⟶ R6070 ⟶ EDIT TERMINAL(5PIN)
- EXTERNAL SERIAL DATA IN : EDIT TERMINAL(5PIN) ⟶ D6018 ⟶ IC6001 (53)
- EXTERNAL SERIAL DATA OUT : IC6001-(52) ⟶ QR6010(BASE)③ ⟶ Q6005(BASE)⑤ ⟶ EDIT TERMINAL(5PIN)
- 5PIN SELECT IC6001 (54) ACTIVE(COMUNICATING)Ⓛ

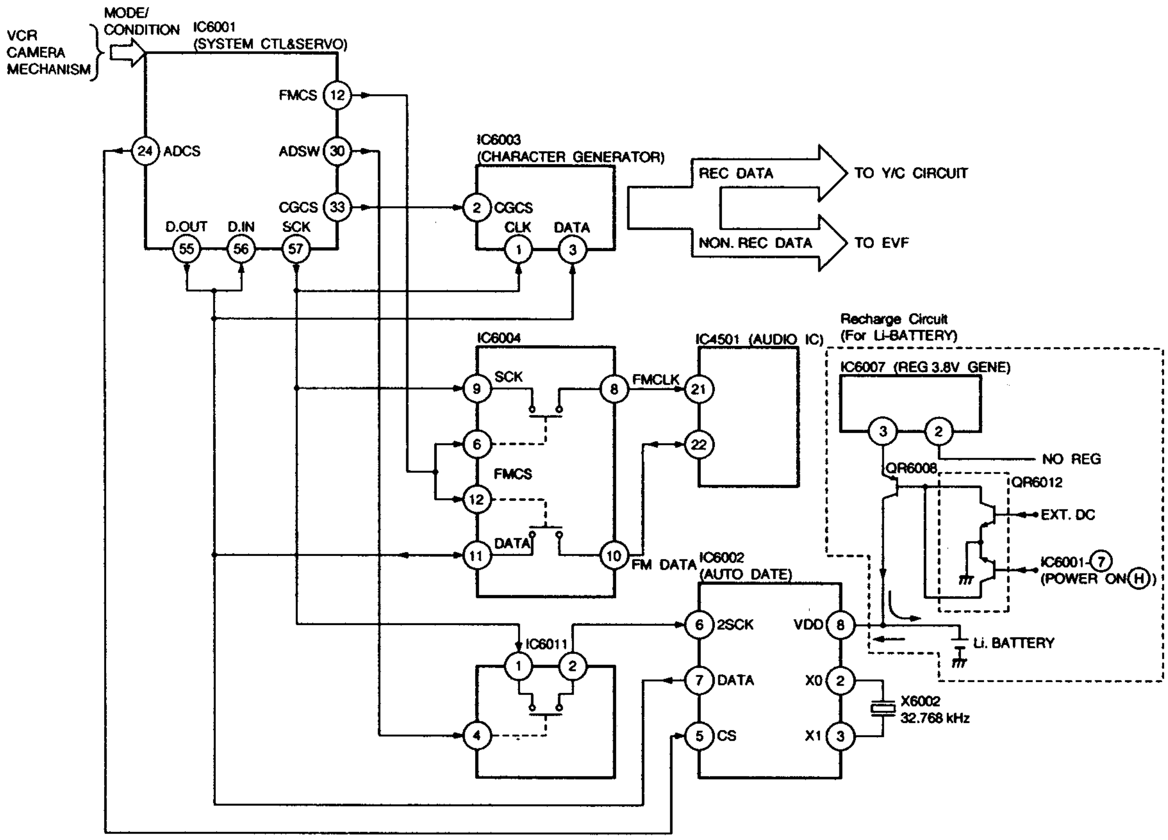
IC6001
(SYSTEM CTL)
↕
IC305
(AF, DSP, DIS μ-COM)

- CAMERA SERIAL CLOCK : IC6001 (54) ⟶ QR6010(BASE)① ⟶ R6091 ⟶ Q6004(BASE) ⟶ D306 ⟶ IC305 (91)
- CAMERA SERIAL DATA IN : IC305 (92) ⟶ QR302(BASE) ⟶ IC6004 ③ ⟶ IC6004 ④ ⟶ QR6010(BASE) ③ ⟶ Q6005(BASE) ⑤ ⟶ D6018 ⟶ IC6001 (53)
- CAMERA SERIAL DATA OUT : IC6001 (52) ⟶ IC6004 ④ ⟶ IC6004 ③ ⟶ D304 ⟶ IC305 (93)
- CAMERA SWITCH : IC6001 ㊻ ⟶ IC6004 ⑤
- CAMERA SELECT : IC6001 (54) ACTIVE(COMUNICATING)Ⓛ
- SERIAL CLOCK ONⒽ : IC305 ⑧ ⟶ IC6001 (73) (*ACTIVEⓁ)
- CAMERA RESET : IC6001 ㊼ ⟶ IC305 (60)

Fig. DT1

2-2. Data transmission ② (IC6001 and IC6003)

The shimplified block diagram is shown below.


VCR
CAMERA
MECHANISM
MODE/
CONDITION
IC6001
(SYSTEM CTL&SERVO)
FMCS ⑫
ADCS ㉔
ADSW ㉚
CGCS ㉝
D.OUT (55)
D.IN (56)
SCK (57)
IC6003
(CHARACTER GENERATOR)
② CGCS
CLK ①
DATA ③
REC DATA
TO Y/C CIRCUIT
NON. REC DATA
TO EVF
IC6004
SCK ⑨
⑧ FMCLK
⑥
FMCS
⑫
DATA ⑪
⑩ FM DATA
IC4501 (AUDIO IC)
㉑
㉒
Recharge Circuit
(For Li-BATTERY)
IC6007 (REG 3.8V GENE)
③ ②
NO REG
QR6008
QR6012
EXT. DC
IC6001-⑦
(POWER ON(H))
Li. BATTERY
IC6002
(AUTO DATE)
⑥ 2SCK
VDD ⑧
⑦ DATA
X0 ②
⑤ CS
X1 ③
X6002
32.768 kHz
IC6011
①
②
④

Circuit Description

IC6001 (SYSTEM CTL) → IC6003 (CHARA GENE)
- SERIAL CLOCK:IC6001(57)→IC6003①
- SERIAL DATA OUT:IC6001(55)→IC6003③
- CHIP SELECT:IC6001㉝→IC6003②

IC6001 (SYSTEM CTL) ↕ IC4501 (AUDIO)
- SERIAL CLOCK:IC6001(57)→IC6004⑨→IC6004⑧→IC4501㉑
- SERIAL DATA IN:IC4501㉒→IC6004⑩→IC6004⑪→IC6001(56)
- SERIAL DATA OUT:IC6001(55)→IC6004⑪→IC6004⑩→IC4501㉒
- FM CHIP SELECT:IC6001⑫→IC6004⑥,⑫

IC6001 (SYSTEM CTL) ← IC6002 (AUTO DATE)
- SERIAL CLOCK:IC6001(57)→IC6011①→IC6002⑥
- SERIAL DATA:IC6002⑦→IC6001(56)
- A/D CHIP SELECT:IC6001㉔→IC6002⑤

Fig. DT2

How to maintain the DATE/TIME operation.

To maintain the DATE/TIME operation, IC6002 is conected to the Lithium battery.
However, if the Movie camera is not used more than approx. 3 months, the Lithium battery will be exhausted.
In this case, it needs to be recharged.
There are 2 kinds of power sources, one is the Battery Pack and the other is an AC Adaptor.
(When you use the battery pack to charge the Lithium Battery, the Power switch should be turned ON.)

Circuit Description(Refer to Fig. DT2)

[AC Adaptor] The External DC is supplied to QR6012-(B), then QR6012 and QR6008 are turned ON.
So, REG 3.8V is supplied to the Lithium battery to charge it.

[Battery Pack]When the Movie Camera turns ON, the Power ON (H) is supplied to QR 6012-(B), then QR6012 and QR6008 are turned ON. So, REG 3.8V is supplied to the Lithium Battery to charge it.
(In the above condition, wait for approx. 4hours to make the fully charged condition.)

POWER SAVE FUNCTIONS
(APS & AGS)

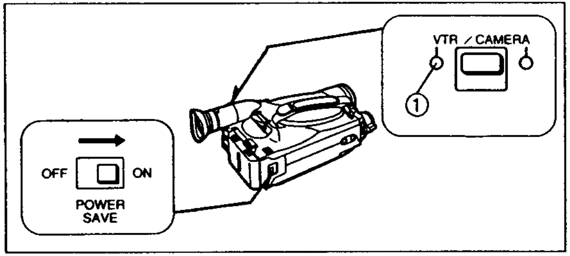
1. General description

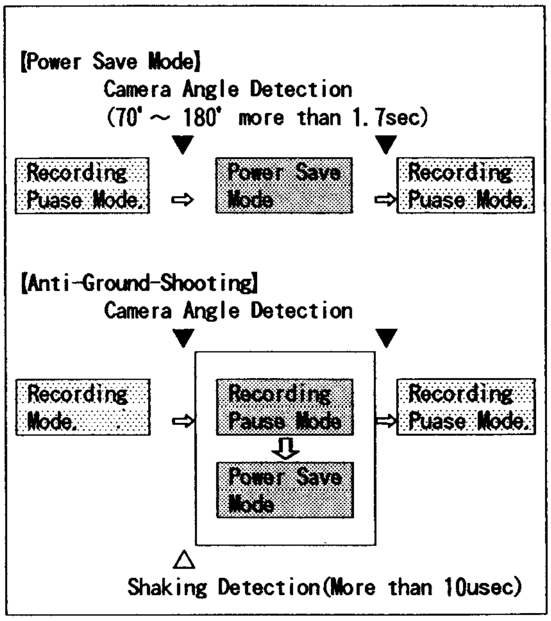
There are two kinds of Power Save function.

①. A P S (Auto Power Saving)
:To prevent unnecessary consumption of the power.

②. A G S (Anti Ground Shooting.)
:To prevent accidental shooting of the ground when carrying the movie camera after shooting the scene.

How to activate the Power Save function:
To activate these function, it is necessary to set the [POWER SAVE] Switch to "ON".
(In this case, the "APS" indication is displayed in the viewfinder.)


VTR / CAMERA
①
OFF
ON
POWER SAVE


[Power Save Mode]
Camera Angle Detection
(70° ~ 180° more than 1.7sec)
Recording Puase Mode.
Power Save Mode
Recording Puase Mode.
[Anti-Ground-Shooting]
Camera Angle Detection
Recording Mode.
Recording Pause Mode
Power Save Mode
Recording Puase Mode.
Shaking Detection(More than 10usec)

For more detail, refer to the following table:

	Effective mode	How to detect it?	During detection	After Detection
APS	*. Shooting pause or *. Without tape	*. Tilt the movie camera more than about 70° from its normal horizontal position. (Approx. 1.7sec)	*"VTR" (Green) LED flashes. *. Turns off (Stop): ◎. Viewfinder ◎. AF motor ◎. ZOOM motor ◎. Recording (AGS)	*. Return the unit to the horizontal position: ◎. The unit is again in the Shooting Pause mode.
AGS	*. Shooting (REC.)	*. Tilt the movie camera more than about 70° from its normal horizontal position (Approx. 1.7sec) and the Cylinder fluctuation caused by walking or quickly downwards.		*. Return the unit to the horizontal position: ◎. The unit turns to the Shooting Pause mode. ◎. The "CHK" indication in the viewfinfer flashes.

2. Circuit Explanation

Fig. T3 is simplified block diagram for AGS/APS. Detail explanation is as follows:

(When the [POWER SAVE] switch sets to "ON", following operation will be activated.)

1. To activate the AGS function, there are 2 kinds of condition are necessary as follows:

(Tilting detection)

*. When camera is turned downward by more than 70° from horizontal position during recording, SW895 (Angle Detector) is turned on.
So, IC6001-pin107 becomes High level.

(Cylinder error detection)

*. Cylinder fluctuation caused by walking or quickly moving to downward are detected from Cylinder PG signal (IC6001-pin77)

Thus the System control IC (IC6001) detects the tilting condition.

2. To save the unnecessary power consumption, IC6001 controls the each circuits as follows:

(VTR LED control)

*. The VTR LED control signal is supplied to the VTR LED (GREEN) intermittently, from IC6001-pin3.
Thus, the VTR LED (GREEN) flashes.

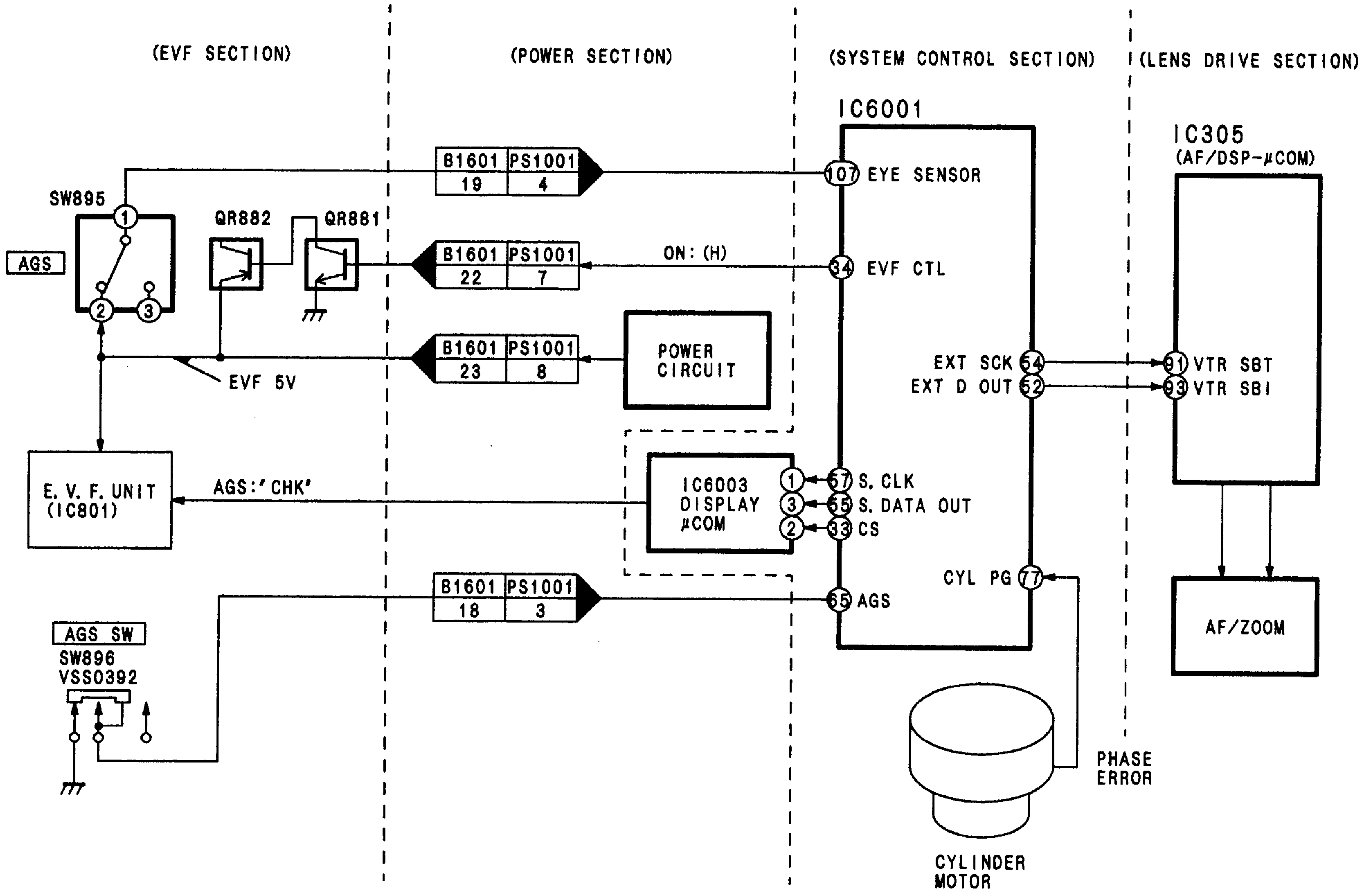
(Vewfinder control)

*. To control the Viewfinder, E.V.F. control signal is supplied to QR881 from IC6001-pin34. QR881 and QR882 turn on, then EVF +5V goes to GND through QR882.
So, IC801 (E.V.F. IC) is turned off, finaly, the viewfinder (CRT) turns off.

(AF and Zoom motor control)

*. To control the AF and Zoom motor, Power Save information is supplied from IC6001 to IC305 by using the serial data line.
◎. Serial Clock :IC6001-pin54⇨ IC305-pin91
◎. Serial Data :IC6001-pin52⇨ IC305-pin93
IC6001-pin53⇦ IC305-pin92

*. Thus, AF and Zoom motor are stopped.


(EVF SECTION)
(POWER SECTION)
(SYSTEM CONTROL SECTION)
(LENS DRIVE SECTION)
IC6001
IC305
(AF/DSP-µCOM)
SW895
AGS
① ② ③
QR882
QR881
B1601
PS1001
19
4
22
7
23
8
18
3
ON: (H)
EVF 5V
POWER CIRCUIT
107 EYE SENSOR
34 EVF CTL
EXT SCK 54
EXT D OUT 52
91 VTR SBT
93 VTR SBI
E. V. F. UNIT (IC801)
AGS:'CHK'
IC6003 DISPLAY µCOM
57 S. CLK
55 S. DATA OUT
33 CS
CYL PG 77
65 AGS
AF/ZOOM
AGS SW
SW896
VSS0392
PHASE ERROR
CYLINDER MOTOR

POWER SAVE FUNCTION (AGS & APS)

Programme AE FUNCTIONS

(Auto Exposure)

1. General Description

NV-R33/R330series have five programme AE (Auto Exposure) mode;Sports, Portrait, Low-Light, including the Auto and Manual.

It can just select the required mode by setting the AE dial, according to the scene's.

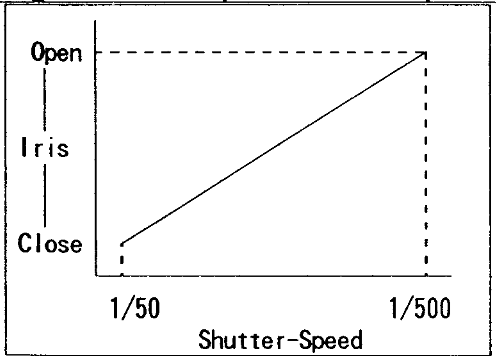
●Sport Mode.

(Shutter Speed have priority over Iris control)

Ideal for getting clear action shots.

When select the Sports Mode,The Shutter speed automatically adjusts between 1/50 and 1/500 of a second depending on the scene's brightness, to capture quick movements without blurring.

(Making the shutter speed as fast as possible)



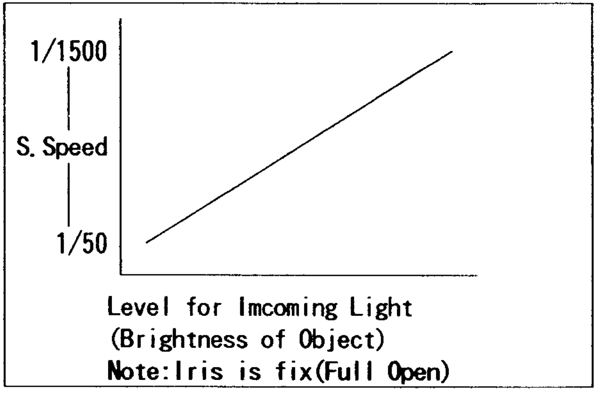
●Portrait Mode

(Iris control have priority over Shutter Speed Control)

Use this to give portraits a special soft touch.

The Iris adjusts to emphasize the subject while giving the background or foreground a soft,out focus effect.

(Opening the Iris as much as possible acccording to lighting conditions.)



●Low-Light Mode

(Increase the AGC gain by applying the extra gain)

When select the Low-Light mode, the increase the sensitivity and brightens up the picture.

To achieve this, increase the AGC gain by appling the extra gain, according to the brightness.

(So, when the picture brightness is enough, the result will be almost the same as normal shooting)

*. The purpose of the Programme AE which is the user could be shooting anytime anywhere.
To keep this, the Movie Camera must be adjusted the brightness of the picture depending on the lighting (illumination) condition.

AE MODE	OSD (IN EVF)	FOCUS／WHITE B	SHUTTER SPEED	IRIS	GAIN CONTROL	How to keep the picture brightness? (Unique point)
AUTO	———	AUTO	FIXED 1/50	VARIABLE (ALC)	AGC	ALC & AGC
MANUAL	MNL	MANUAL	FIXED 1/50	VARIABLE (ALC)	AGC	ALC & AGC
SPORT		MANUAL	1/500 (1/500~1/50)	VARIABLE (ALC)	AGC	Keeps the S.SPD to 1/500sec. as much as possible(ALC/AGC)
PORTRAIT		MANUAL	VALIABLE 1/50~1/1500	FULLY OPEN (FIXED)	AGC (OFF)	Fully opens the iris as much as possible. (S.SPD/AGC)
LOW LIGHT		MANUAL	FIXED 1/50	VARIABLE (ALC)	AGC (NML G.+α)	AGC gains up (Adding normal AGC gain +α)
———	———	———	The brightness of the picture must be kept.			———

1. SHUTTER SPEED CONTROL

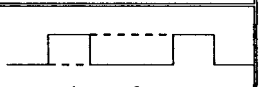
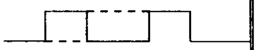
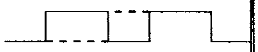
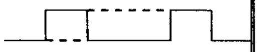
To achieve the "SPORTS" and "PORTRAIT" mode, the shutter speed must be controled depending on the picture brightness.

The shutter speed control signal is generated at IC301 (DSP), based on the picture brightness information which is supplied from IC302(Y/C-DSP) by using the data line.
This signal is supplied to IC201(CCD DRIVE) from IC301 (DSP) by using the serial data line.
·CLOCK IC301(DSP)-(98)⟶ IC201(CCD DRIVE)-(16)
·DATA IC301(DSP)-(99)⟶ IC201(CCD DRIVE)-(22)
IC201(CCD DRIVE)generates the SUB PULSE based on above serial data.
Then it is mixed up with SUB CONT(BIAS)signal which is supplied from IC308(D/A conv.) pin 3 to make the SUB signal.
(The SUB CONT signal is DC voltage which prevents the smiar or blooming.)
Fainally, it is supplied to CCD image sensor from IC201 pin 42.
Thus the shutter speed is changed gradually depending on the picture brightness as shown below.
*. SPORTS mode:1/500(1/500 ⇨1/50(Normal))
*. PORTRAIT mode:1/50(1/50 ⇨1/1500)

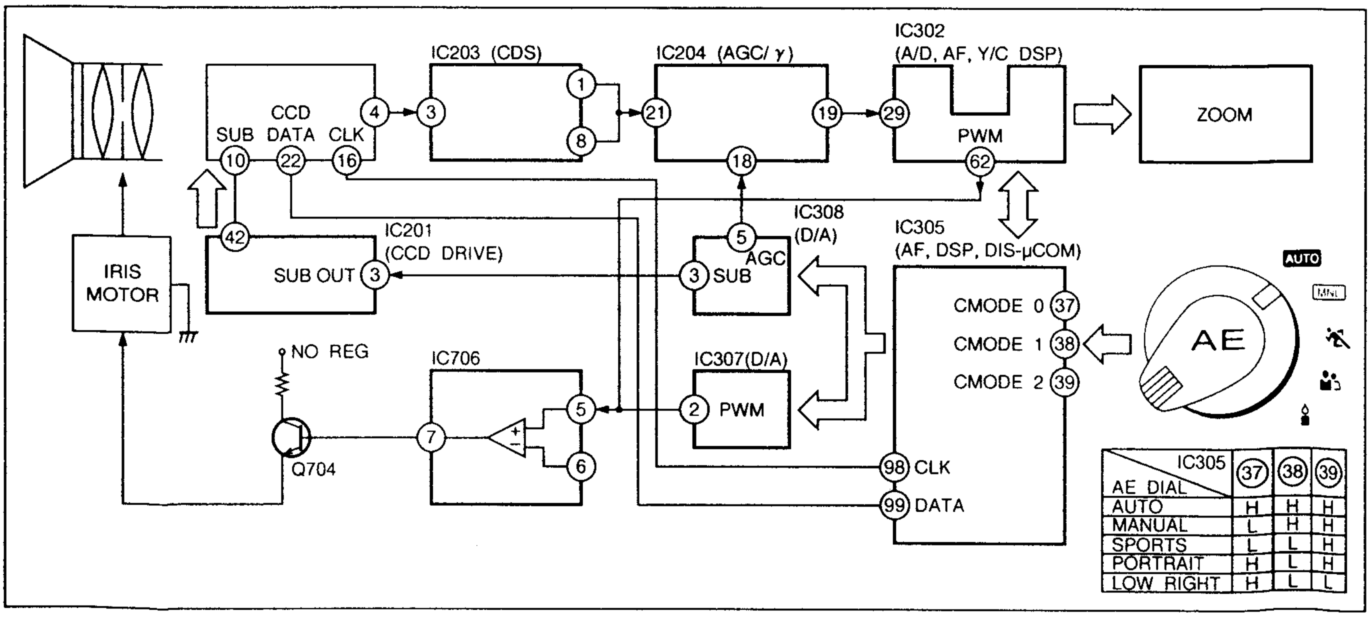
NOTE:
*. Regarding the normal shutter speed(1/50sec), the SUB OUT signal is just DC voltage. (Approx:10V)

2. ALC CONTROL

To control the picture brightness,
The IRIS is also controled.
Just for your reference, relationship between the Programme AE and the PWM output are as shown in Fig AE2. (Its object is the Light Box.)

Programme AE	WAVEFORM (IC6001-pin 17(PWM))
AUTO/ MANUAL	 1 2
SPORTS	 2 2.5
PORTRAIT	 2.5 2
LOW LIGHT	 1 2

NOTE:
The IRIS opening condition is controlled by the ratio of the PWM output. (IC302-pin62)
(When its high period is longer, the IRIS moves to more openning side.)
*. To achieve the "PORTRAIT"mode, the IRIS must be set to its maximum opening which results in a very small depth-of-field.
In this case, high intensity lights is easlly coming into the CCD image sensor.
(To prevent this, the shutter speed is changing variably, up to 1/500sec.)
*. In the "Low Light" mode, the PWM output is same as "AUTO" and "MANUAL" becouse of the avoiding like "PORTRAIT" mode's picture.


CCD
SUB DATA CLK
④ ⑩ ㉒ ⑯ ㊷
IC203 (CDS)
③ ① ⑧
IC204 (AGC/γ)
㉑ ⑲ ⑱
IC302
(A/D, AF, Y/C DSP)
㉙
PWM
62
ZOOM
IC201
(CCD DRIVE)
SUB OUT ③
IRIS
MOTOR
IC308
(D/A)
⑤ AGC
③ SUB
IC305
(AF, DSP, DIS-μCOM)
CMODE 0 ㊲
CMODE 1 ㊳
CMODE 2 ㊴
98 CLK
99 DATA
NO REG
Q704
IC706
⑦ ⑤ ⑥
IC307(D/A)
② PWM
AE
AUTO
MNL

IC305 / AE DIAL	㊲	㊳	㊴
AUTO	H	H	H
MANUAL	L	H	H
SPORTS	L	L	H
PORTRAIT	H	L	H
LOW RIGHT	H	L	L

The Built-in Lithium Battery

1. GENERAL DESCRIPTION

NV-R33/R330 series have a built-in rechargeable lithium battery.
It maintains the operation of the built-in clock (Date and Time)when the Movie Camera is turned off. When the Movie Camera is in operation, this battery is recharged automatically.
However, if the Movie Camera is not used for a very long time, the lithium battery can become exhausted. In this case, the Indication " " in the Viewfinder flashes and the date and time return to the initial Indication " 1. 1.1990 ".

2. HOW TO RECHARGE THE BUILT-IN LITHIUM BATTERY

If the Indication " " in the Viewfinder flashes for approx. 10 seconds when turning the Movie Camera on, the lithium battery needs to be recharged as follows:

By using the AC Adaptor:
(1).Connect the AC adoptor to the Movie Camera. (The Power switch does not have to turn ON.)

By using the Battery PACK:
(1).Connect the Battery Pack to the Movie Camera.
(2).Turn "ON" the Power Switch.

NOTE: (In the above condition, wait for approx. 4 hours to make the fully charged condition.
After the lithium battery has been charged for approx. 4 houres, it can maintain the operation of the clock for approx. 3 months.)

3. HOW TO REPLACE THE LITHIUM BATTERY

(PROCEDURES)

1.Remove the E.V.F. Unit following the dis-assemble procedure(Section 2).

2.Remove 3 gold screws and separate EVF C.B.A. and EVF case.
3.Unsolder the Lithium battery "VL2020/1HF" and then replace the new one. (See Fig B1)

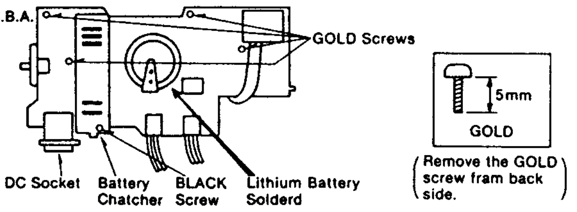


Fig. B1

NOTE :

The lithium battery is a critical component(Type No. :VL2020/1HF Manufactured by Panasonic.)
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in equipment designed specifically for its use.
Replacement batteries must be of the same type and manufacturer.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the old battery or re-use it for any other purpose.
It should be disposed of in waste products destined for burial rather than incineration.

CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's instructions.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri
af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

SERVICE INFORMATION DISPLAY

General Description

The NV-R33/R330 series has SERVICE INFORMATION DISPLAY function which facilitates quick trouble-shooting. You can turn on the Service Information Display, by performing the following procedures. This causes the Service Information to be displayed on the EVF. (There are 4 kinds of SERVICE MODE, as shown below.) In the OSD Line Output Mode, Service Information can also be viewed on the TV.

MODE NAME	FUNCTION	How to turn it ON. (Push following keys simultaneously for at least 2 sec.)		
OSD Line Output MODE	· Checking the EVF information on the TV monitor.	DATE/TIME SET (TOP PANEL)	RESET (TOP PANEL)	DATE TIME (SIDE PANEL)

MODE NAME	FUNCTION	How to turn it ON. (Push following keys simultaneously for at least 2 sec.)		
SERVICE MODE 1	· Remaining Battery A/D Value · Safety Device · Capstan/Cylinder injuctions	DATE/TIME SHIFT (TOP PANEL)	RESET (TOP PANEL)	DATE TIME (SIDE PANEL)

MODE NAME	FUNCTION	How to turn it ON. (After chosing SERVICE MODE 1, Push [DATE/TIME] key. (SIDE PANEL)
SERVICE MODE 2	· Reference Voltage A/D Value · Mechanism position · Serial key code.	DATE/ TIME

MODE NAME	FUNCTION	How to turn it ON. (After chosing SERVICE MODE 2, Push [DATE/TIME] key. (SIDE PANEL)
SERVICE MODE 3	· ERROR CODE Display	DATE/ TIME

MODE NAME	FUNCTION	How to turn it ON. (After chosing SERVICE MODE 3, Push [DATE/TIME] key. (SIDE PANEL)
SERVICE MODE 4	·PG SHIFTER ADJUSTMENT	DATE/ TIME

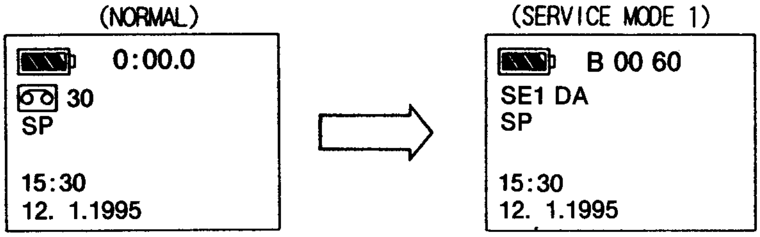
ERROR CODE DISPLAY

When undesirable conditions occur, the "ERROR CODE" will automatically be displayed on the EVF, also the CAMERA LED will flash for a short time, then the power will be turned off.
By turning on Service Mode 3, you can check to see what kind of undesirable condition occured, even after the ERROR CODE has disappeared. (To perform the Service Mode 3, do not disconnect the AC adoptor or battery pack, after undesiable condition occured.)
To clear the ERROR CODE, disconnect the AC Main Lead or the Battery.

SERVICE MODE 1

① Remaining Battery Voltage (A/D Value)=This Value shows the voltage at IC6001 Pin 98 which detects the battery under cut.

Display:
(Example)



For example ⇒ SE1 DA
(Service Mode1) (IC6001 Pin 98 is 3.25V.)
(Batt. Remaining Volt.)

★ When the voltage at IC6001 pin98(the battery remaining voltage) and the voltage at IC6001 Pin 99 (the reference voltage) became the same level, battery under cut will be detected.

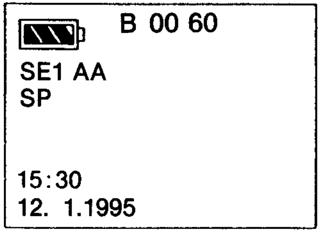
		Low Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
High Digit	0	0	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.12	0.13	0.15	0.16	0.18	0.19	0.21	0.22
	1	0.24	0.25	0.27	0.28	0.30	0.31	0.33	0.34	0.36	0.37	0.39	0.40	0.41	0.43	0.45	0.46
	2	0.48	0.49	0.51	0.52	0.54	0.55	0.57	0.58	0.60	0.61	0.63	0.64	0.66	0.67	0.69	0.70
	3	0.72	0.73	0.75	0.76	0.77	0.79	0.80	0.81	0.83	0.85	0.86	0.88	0.89	0.91	0.92	0.94
	4	0.95	0.97	0.98	1.00	1.01	1.03	1.04	1.06	1.07	1.09	1.10	1.12	1.13	1.15	1.16	1.18
	5	1.19	1.21	1.22	1.24	1.25	1.27	1.28	1.30	1.31	1.33	1.34	1.36	1.37	1.39	1.40	1.42
	6	1.43	1.45	1.46	1.48	1.49	1.50	1.52	1.53	1.55	1.56	1.58	1.59	1.61	1.62	1.64	1.65
	7	1.67	1.68	1.70	1.71	1.73	1.74	1.76	1.77	1.79	1.80	1.82	1.83	1.85	1.86	1.87	1.89
	8	1.91	1.92	1.94	1.95	1.97	1.98	2.00	2.01	2.03	2.04	2.06	2.07	2.09	2.10	2.12	2.13
	9	2.15	2.16	2.18	2.19	2.21	2.22	2.24	2.25	2.26	2.28	2.29	2.31	2.32	2.34	2.35	2.37
	A	2.38	2.40	2.41	2.43	2.44	2.46	2.47	2.49	2.50	2.52	2.53	2.55	2.56	2.58	2.60	2.61
	B	2.62	2.64	2.65	2.67	2.69	2.70	2.71	2.73	2.74	2.76	2.77	2.79	2.80	2.82	2.83	2.85
	C	2.86	2.88	2.89	2.91	2.92	2.94	2.95	2.97	2.98	2.99	3.01	3.02	3.04	3.05	3.07	3.08
	D	3.10	3.11	3.13	3.14	3.16	3.17	3.19	3.20	3.22	3.23	3.25	3.26	3.28	3.29	3.31	3.32
	E	3.34	3.35	3.37	3.38	3.40	3.41	3.43	3.44	3.46	3.47	3.49	3.50	3.52	3.53	3.55	3.56
	F	3.58	3.59	3.61	3.62	3.64	3.65	3.67	3.68	3.70	3.71	3.73	3.74	3.75	3.77	3.78	3.80

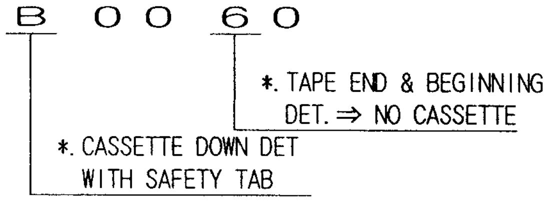
Remaining Battery Voltage (A/D value) (Voltage at IC6001 Pin 98)

② The condition of the tape, safety device, capstan/cylinder information are shown in hexa decimal numbers.

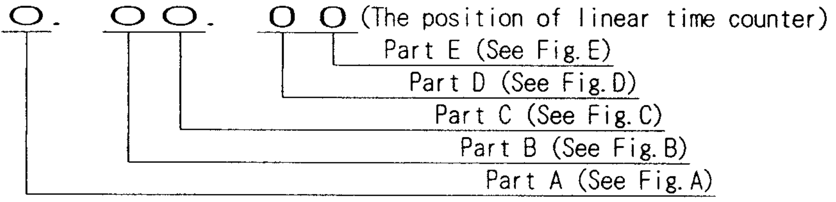
Display:
(Example)

(SERVICE MODE 1)


B 00 60
SE1 AA
SP
15:30
12. 1.1995


B 00 60
*. TAPE END & BEGINNING DET. ⇒ NO CASSETTE
*. CASSETTE DOWN DET WITH SAFETY TAB

Display position ⇒


O. OO. OO
(The position of linear time counter)
Part E (See Fig. E)
Part D (See Fig. D)
Part C (See Fig. C)
Part B (See Fig. B)
Part A (See Fig. A)

DISPLAY CONTENTS	8	9	A	B
CASSETTE DOWN SW (CASS. DOWN:1)	0	1	0	1
SAFETY TAB SW (TAB:1)	0	0	1	1
NOT USED(ALWAYS "0")	0	0	0	0
NOT USED(ALWAYS "1")	1	1	1	1

Fig. A

DISPLAY CONTENTS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LOADING LOCK (DET. :1)	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
CYLINDER LOCK (DET. :1)	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
T-REEL LOCK (DET. :1)	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
S-REEL LOCK (DET. :1)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

Fig. B

DISPLAY CONTENTS	0	4	8	C
NOT USED(ALWAYS "0")	0	0	0	0
NOT USED(ALWAYS "0")	0	0	0	0
BATTERY UNDER CUT(DET:1)	0	1	0	1
DEW SENSOR (DET:1)	0	0	1	1

Fig. C

DISPLAY CONTENTS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
UN-LOADING COMMAND (OUTPUT:1)	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
TAPE END DETECTION (DET. :1)	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
TAPE BEGINNING DETECTION(DET. :1)	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
POSITION CHATARING (DET. :1)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

Fig. D

DISPLAY CONTENTS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
CYLINDER ON (OUTPUT:1)	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
CAPSTAN ON (OUTPUT:1)	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
CAPSTAN REV. (OUTPUT:1)	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
LOADING ON (OUTPUT:1)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

Fig. E

SERVICE MODE 2

① Reference voltage A/D Value =This value shows the voltage at IC6001 Pin 99 which is used as a reference voltage to detect the battery under cut.

Display:
(Example)

(SERVICE MODE 1)

B 00 60
SE1 AA
SP

15:30
12. 1.1995

⇨

(SERVICE MODE 2)

3 00 08
SE2 AA
SP

15:30
12. 1.1995

For example ⇒S E 2 A A
(Service Mode 2) (IC6001 Pin 99is 2.53V.)
(Reference voltage)

★. When the following formula is fulfilled, the under-cut is detected.

FORMULA (REFERENCE VOLTAGE) ≧ (REMAINING BATTERY VOLTAGE)
(IC6001 pin 99) (IC6001 pin 98)

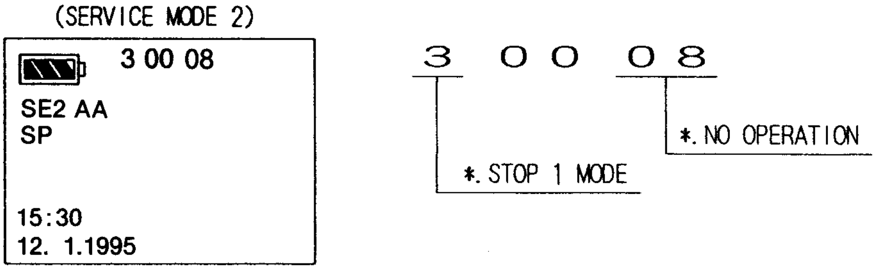
(unit:V)

		Low Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
High Digit	0	0	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.12	0.13	0.15	0.16	0.18	0.19	0.21	0.22
	1	0.24	0.25	0.27	0.28	0.30	0.31	0.33	0.34	0.36	0.37	0.39	0.40	0.41	0.43	0.45	0.46
	2	0.48	0.49	0.51	0.52	0.54	0.55	0.57	0.58	0.60	0.61	0.63	0.64	0.66	0.67	0.69	0.70
	3	0.72	0.73	0.75	0.76	0.77	0.79	0.80	0.81	0.83	0.85	0.86	0.88	0.89	0.91	0.92	0.94
	4	0.95	0.97	0.98	1.00	1.01	1.03	1.04	1.06	1.07	1.09	1.10	1.12	1.13	1.15	1.16	1.18
	5	1.19	1.21	1.22	1.24	1.25	1.27	1.28	1.30	1.31	1.33	1.34	1.36	1.37	1.39	1.40	1.42
	6	1.43	1.45	1.46	1.48	1.49	1.50	1.52	1.53	1.55	1.56	1.58	1.59	1.61	1.62	1.64	1.65
	7	1.67	1.68	1.70	1.71	1.73	1.74	1.76	1.77	1.79	1.80	1.82	1.83	1.85	1.86	1.87	1.89
	8	1.91	1.92	1.94	1.95	1.97	1.98	2.00	2.01	2.03	2.04	2.06	2.07	2.09	2.10	2.12	2.13
	9	2.15	2.16	2.18	2.19	2.21	2.22	2.24	2.25	2.26	2.28	2.29	2.31	2.32	2.34	2.35	2.37
	A	2.38	2.40	2.41	2.43	2.44	2.46	2.47	2.49	2.50	2.52	2.53	2.55	2.56	2.58	2.60	2.61
	B	2.62	2.64	2.65	2.67	2.69	2.70	2.71	2.73	2.74	2.76	2.77	2.79	2.80	2.82	2.83	2.85
	C	2.86	2.88	2.89	2.91	2.92	2.94	2.95	2.97	2.98	2.99	3.01	3.02	3.04	3.05	3.07	3.08
	D	3.10	3.11	3.13	3.14	3.16	3.17	3.19	3.20	3.22	3.23	3.25	3.26	3.28	3.29	3.31	3.32
	E	3.34	3.35	3.37	3.38	3.40	3.41	3.43	3.44	3.46	3.47	3.49	3.50	3.52	3.53	3.55	3.56
	F	3.58	3.59	3.61	3.62	3.64	3.65	3.67	3.68	3.70	3.71	3.73	3.74	3.75	3.77	3.78	3.80

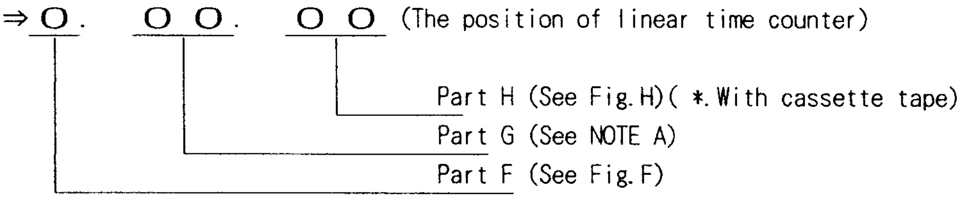
Reference Voltage (A/D value) (Voltage at IC6001 Pin 99)

② The contents of mechanism position, serial key code and mechanical process number are shown in hexa decimal number.

Display:
(Example)


(SERVICE MODE 2)
3 00 08
SE2 AA
SP
15:30
12. 1.1995
3 00 08
*. NO OPERATION
*. STOP 1 MODE

Display position ⇒ 0. 00. 00 (The position of linear time counter)


Part H (See Fig.H)(*.With cassette tape)
Part G (See NOTE A)
Part F (See Fig.F)

DISPLAY	MECHANISM POSITION
1	EJECT
2	PRE・EJECT
3	STOP 1
4	PRE・STOP
5	(MID)
6	
7	
8	STOP 2
9	———
A	PLAY

Fig.F (Mechanism Position)

DISPLAY	KEY CODE
00	STOP
01	EJECT
02	REW
03	FF
06	PAUSE
08	REC/REC PAUSE
0A	PLAY
FF	NO OPERATION

NOTE: To activate the key code display function, insart the casstte tape to the movie.).)

Fig.H (Key code)

NOTE A:

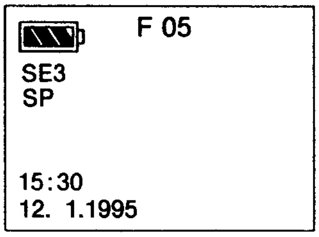
This part shows mechanism movement process.
However it changes too fast to read it.
When servicing, use the Part F (Mechaism Position:See Fig.F)in stead of Part G.

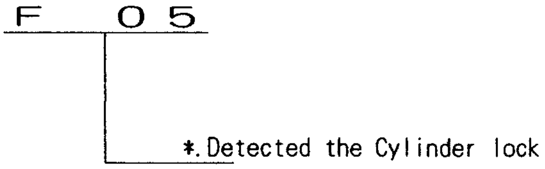
SERVICE MODE 3

① After undesirable conditions occured, you can check to see what kind of error occured by turning on the Service Mode 3. (The Error Code is displayed on the E.V.F. again, even power is turned OFF.
NOTE : To perform the service mode 3, do not disconnect the AC Adoptor or Battery pack, after undesiable condition occured. (After AC adoptor or Battery pack is disconnected, the Error Code is elased.)

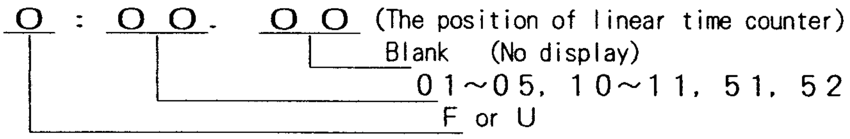
Display:
(Example)

(SERVICE MODE 3)


F 05
SE3
SP
15:30
12. 1.1995


F 05
*.Detected the Cylinder lock

Display position ⇒
(See Fig. I)


0 : 00. 00
(The position of linear time counter)
Blank (No display)
01~05, 10~11, 51, 52
F or U

DISPLAY	CONDITION	The Power off timing
F 0 1	T-REEL LOCK	After 1 minute (flashing the LED)
F 0 2	S-REEL LOCK	
F 0 3	UNLOADING LOCK	
F 0 4	LOADING LOCK	
F 0 5	CYLINDER LOCK	
F 5 1	FOCUS MOTOR LOCK	-----------
F 5 2	ZOOM MOTOR LOCK	
U 1 0	DEW DETECTION	After 18 minutes(flashing the LED)
U 2 0	HEAD CLOGGING	Not turning off

Fig. I Error Code

When undesiable condition occured, you can check error code by looking at how the CAMERA LED flashes (The flashing pattern differ according to the Error Code.)
Note:Even if the Service Mode 3 is activated, the CAMERA LED will not flash again.)

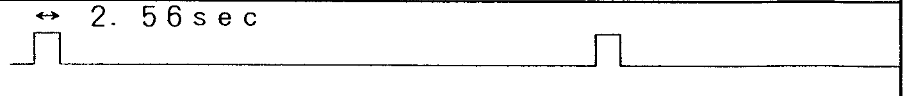
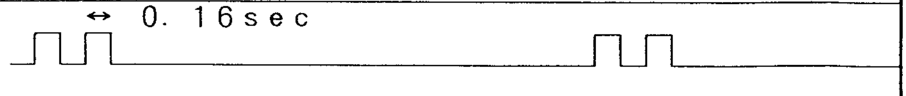
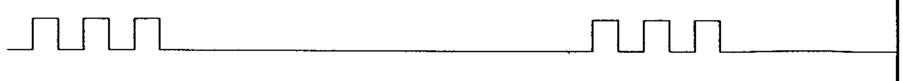
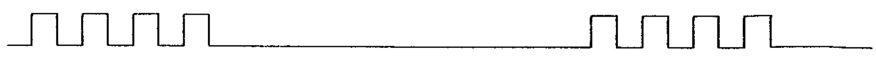
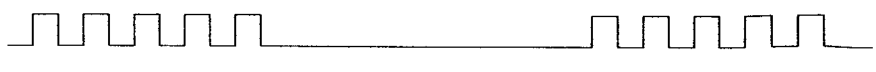
Lock Condition	Power LED Flashing Timming
T-REEL LOCK (F01)	
S-REEL LOCK (F02)	
UNLOADING LOCK (F03)	
LOADING LOCK (F04)	
CYLINDER LOCK (F05)	
OTHERS (U10 & U11)	Power LED is flashed at 1 Hz timing

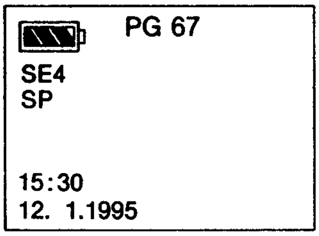
Fig. J LED Flashing Timing

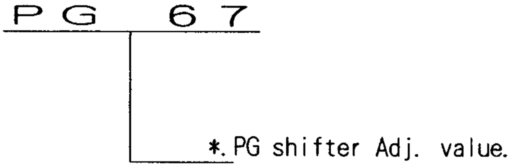
SERVICE MODE 4

① Service Mode 4 is PG SHIFTER ADJUSTMENT mode for Servo section.
For more detail, please refer to Adjustment Service Manual Order No. VMD9501M107.

Display:
(Example)

(SERVICE MODE 3)


PG 67
SE4
SP
15:30
12. 1.1995


P G 6 7
*. PG shifter Adj. value.

3. How to Check Digital Circuit

3-1. Checking Principle

The digital circuit can be checked if a ramp signal (Sawtooth signal) is supplied to the input of A/D Converter(IC302-29).

The output od A/D converter is described below.
In addition to the A/D converter IC302 output, all digital ICs input and output signals become specified pulses, which are listed in schematic diagram.

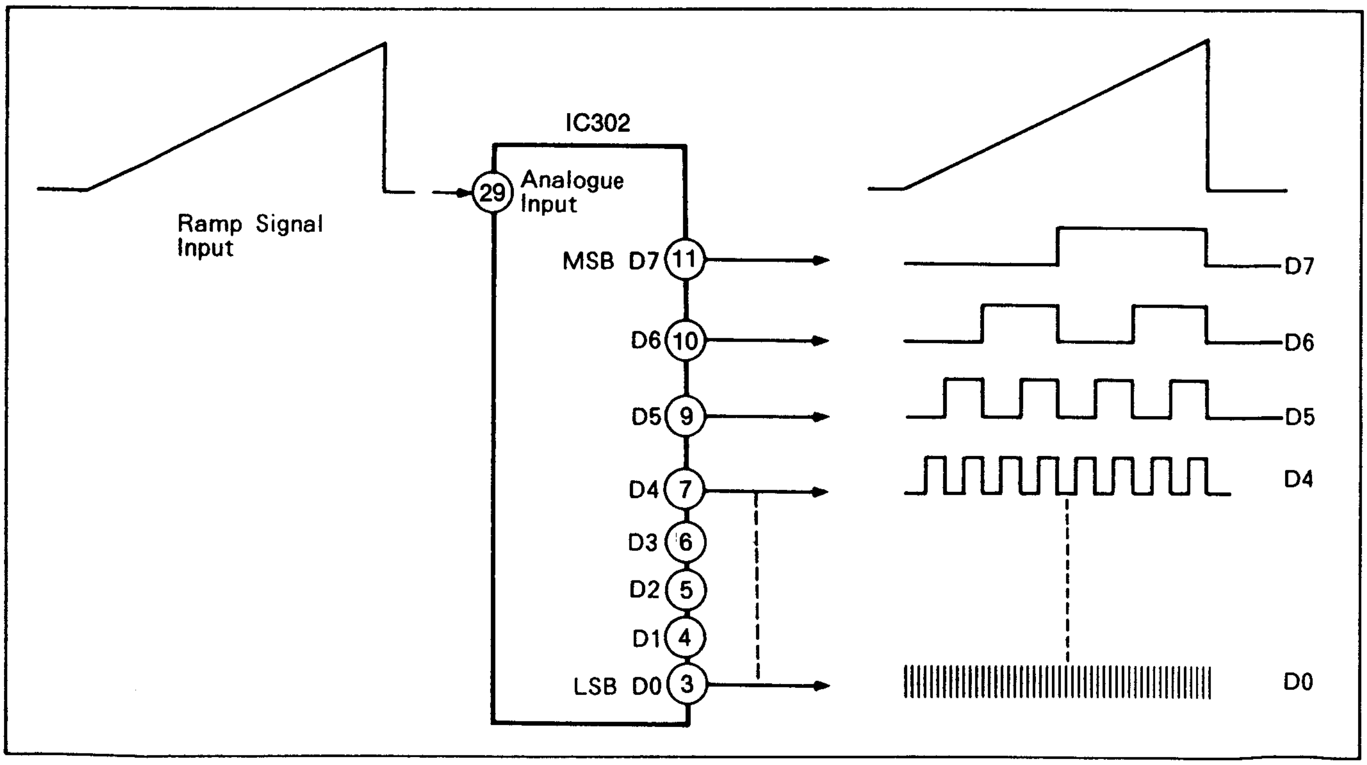
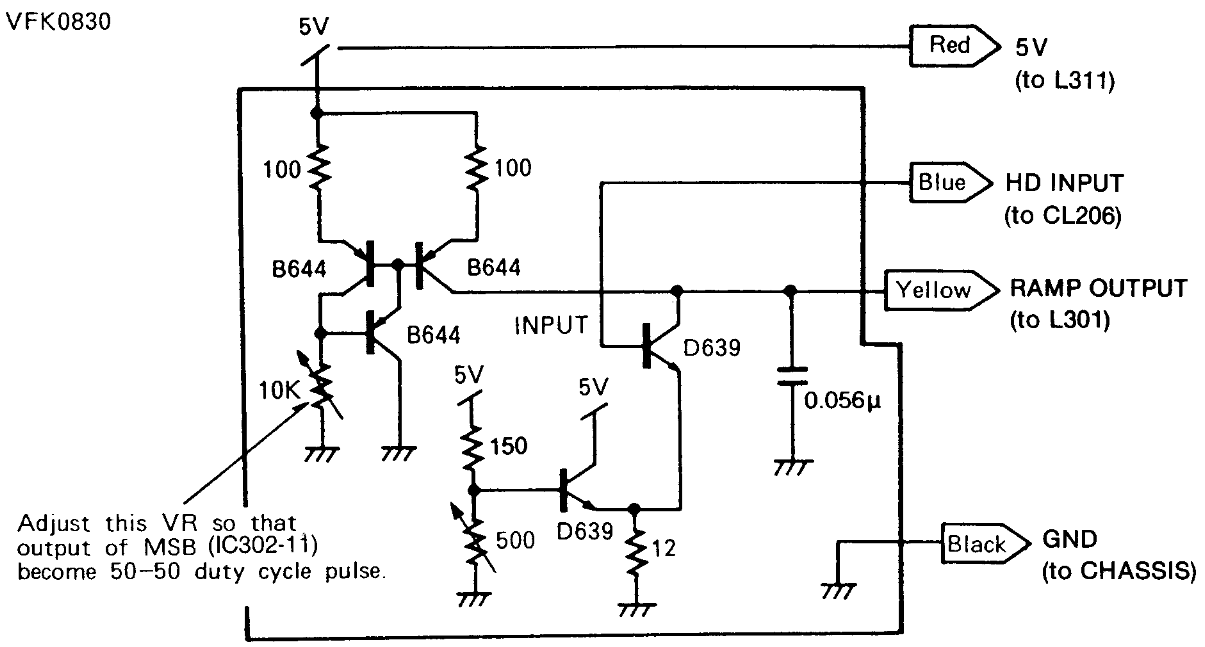

IC302
Ramp Signal Input
29 Analogue Input
MSB D7 11
D6 10
D5 9
D4 7
D3 6
D2 5
D1 4
LSB D0 3
D7
D6
D5
D4
D0

Fig. L1

3-2. How to Connect ramp generator.

In order to generate a ramp signal that synchronize with the HD signal(Horizontal Drive) of the camera, the following ramp generator circuit has been designed.
Construct and connect it to process borad as shown in Fig. L2, L3.


VFK0830
5V
Red
5V
(to L311)
100
100
Blue
HD INPUT
(to CL206)
B644
B644
Yellow
RAMP OUTPUT
(to L301)
B644
INPUT
D639
10K
5V
5V
0.056µ
150
500
D639
12
Black
GND
(to CHASSIS)

Adjust this VR so that output of MSB (IC302-11) become 50-50 duty cycle pulse.

ITEMS	VALUE	PCS
RESISTOR		
ERDS2TJ120	**12ohm**	**1**
ERDS2TJ101	**100ohm**	2
ERDS2TJ151	**150ohm**	**1**
VARIABLE RESISTOR		
EVNDRAA00B14	10Kohm	1
EVNDRAA00B52	500ohm	1
TRANSISTOR		
2SB644	**PNP**	**3**
2SD639	**NPN**	**2**
CAPACITOR		
ECQB1H563JH	**0.056µ**	**1**

Fig. L2

L301
Connect the output
of Ramp-Generator (YELLOW)

Remove
R301

L311
5V
(RED)

CL206
HD
(BLUE)

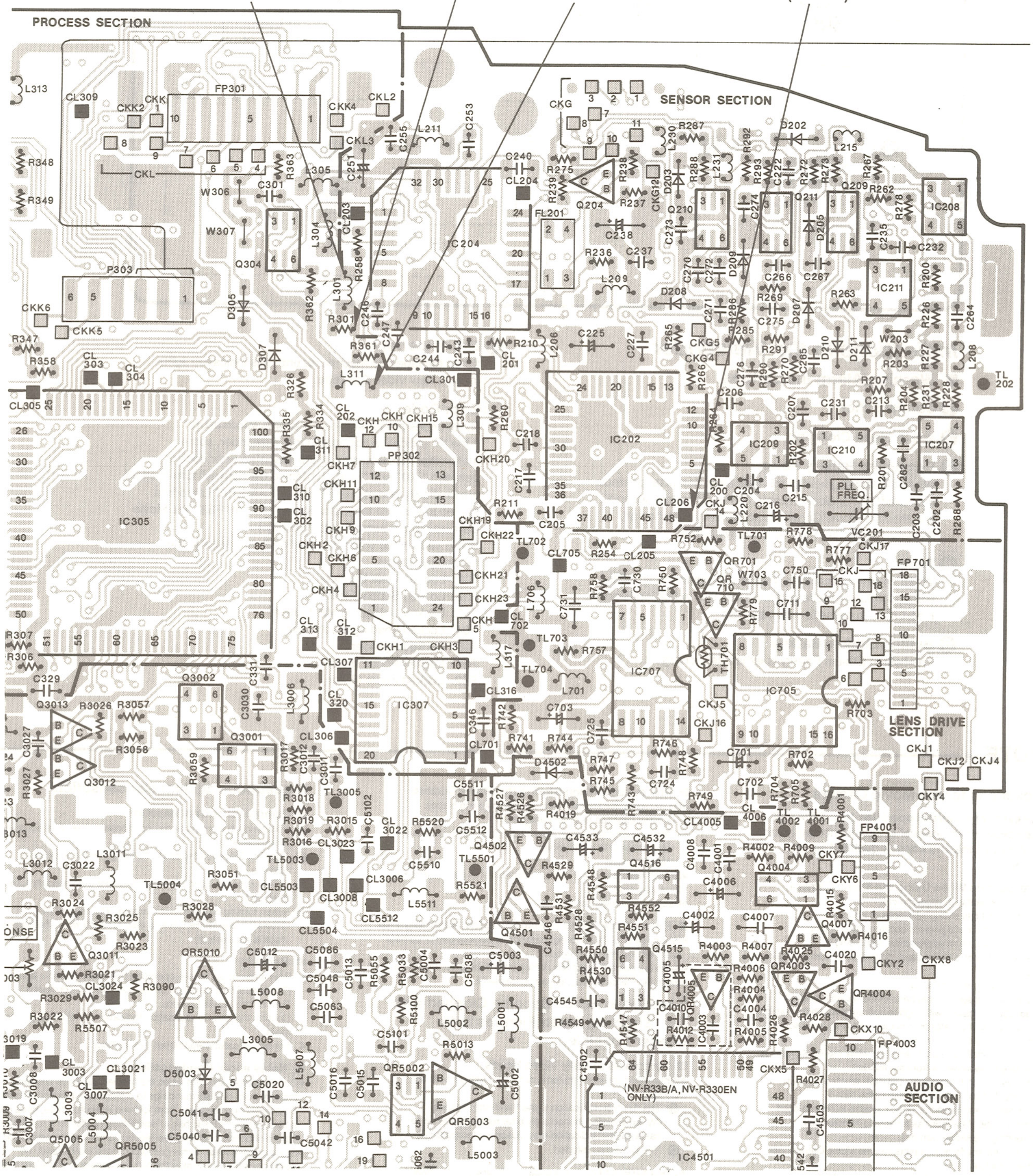
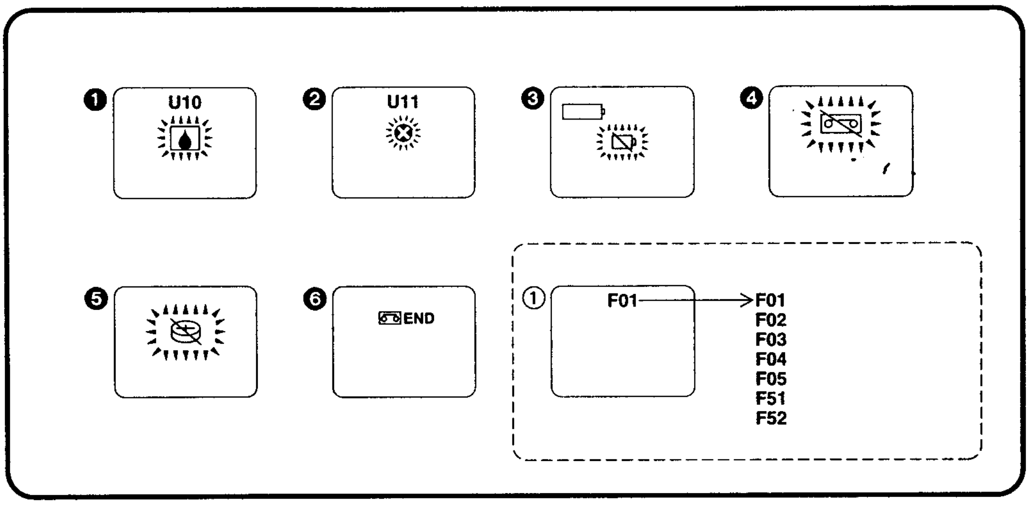

PROCESS SECTION
SENSOR SECTION
LENS DRIVE SECTION
AUDIO SECTION
(NV-R33B/A, NV-R330EN ONLY)
L301
R301
L311
CL206
IC305
IC204
IC202
IC307
IC707
IC705
IC4501
IC208
IC211
IC209
IC210
IC207
FP301
FP701
FP4001
FP4003
PP302
P303
PLL FREQ.

Fig. L3

SECTION 1
GENERAL DESCRIPTIONS



Indications in the Viewfinder

■ Warning/Alarm Indications

❶ Condensation

❷ Video Head Clogging

❸ Remaining Battery Power

When the last segment of this indication has disappeared, the "CAMERA" Indication Lamp flashes for a few seconds, and then the Movie Camera automatically switches off. Replace the Battery Pack with a fully charged one.

❹ Tape

When no video cassette is inserted, or when the tab of the inserted video cassette is broken out, this indication flashes. Insert a video cassette with intact tab.

❺ Built-in Lithium Battery

The built-in Lithium Battery is exhausted; charge it.

❻ End of the Tape

When the tape has reached its end, this indication lights. Insert a new Video Cassette.

① Error Code

(Error codes are for service personnel information.)
If the "F" Indication appears in the Viewfinder, some malfunction has occurred. If the indicated error code is between "F01" and "F05", the Movie Camera will turn itself off automatically one minute after the "CAMERA" Lamp has started to flash. (If the indication is "F51" or "F52", the Movie Camera will not turn off automatically.)
In this case, write down the error code and tell it to the service personnel.

F01: Locked Take Up-Reel
F02: Locked Supply-Reel
F03: Locked Unloading Mechanism
F04: Locked Loading Mechanism
F05: Locked Cylinder
F51: Locked Focus Motor
F52: Locked Zoom Motor

NOTE

Precautions for the Movie Camera

In the event of abnormal operation (e.g. if the unit emits smoke or an unusual smell), immediately stop operating the unit and consult qualified service personnel.

■ Precautions When Using the Movie Camera

- Do not disassemble or reconstruct it.
- Do not subject it to strong vibrations or shocks.
  (Handle it with care to prevent accidentally dropping it.)
- When a thunderstorm approaches, stop using it.
  (If the AC Adaptor is being used, disconnect it from the mains outlet.)
- Do not aim the Lens at the sun.
  (This could damage internal parts of the Movie Camera.)
- Do not use it in places with high temperature and high humidity.
- Do not use it in the water or in places where water or some other liquid could splash on it.
  (If it is accidentally dropped into water while the AC Adaptor is being used, disconnect it from the mains.)
- Do not use it with the cassette compartment facing down.
  (This could cause uneven winding of the tape.)
- Do not insert or remove the video cassette in dusty places.
- Do not use the Viewfinder as a carrying handle when transporting the Movie Camera.
- Do not insert any foreign objects into the Movie Camera nor spill water into it.
- Do not use it near magnets or magnetized objects.
- Do not use it in areas with strong electric fields.
  (This could negatively influence the picture quality.)
- Do not operate it near a TV set or a radio.
  (This could distort the picture and sound reception.)
- Do not use it in places with steam or oily smoke.

■ Precautions When Storing the Movie Camera

- Do not store this Movie Camera in the following places:
  - —Places exposed to direct sunlight.
  - —Places with high temperature and high humidity (e.g. in a closed car or in a bathroom).
  - —Near heaters.
- Do not leave it in direct contact with rubber or plastic products for a long time.
- Keep it out of reach of children.

■ Precautions When Transporting the Movie Camera

- When not actually shooting, carry it in a camera bag or camera case for maximum protection.
- Keep the packing materials. When transporting it in the future, pack it in the same way as you purchased it.

If the Video Heads Become Clogged with Dirt, Shooting Clean Pictures Is No Longer Possible.

■ Symptoms of Dirty Video Heads

- When the following symptoms occur, the video heads are clogged.
  ❶ The "U11/⊗" Indication in the Viewfinder flashes.
  (When shooting immediately after replacing the video cassette, this indication may disappear temporarily.)
  ❷ The picture is distorted.

- When the video heads are excessively clogged, the Movie Camera's recording and playback capacity is impaired. When the above symptoms occur, consult qualified personnel.

Precautions against Condensation

■ Symptoms of Condensation

If the following symptoms occur, condensation has formed inside the Movie Camera.

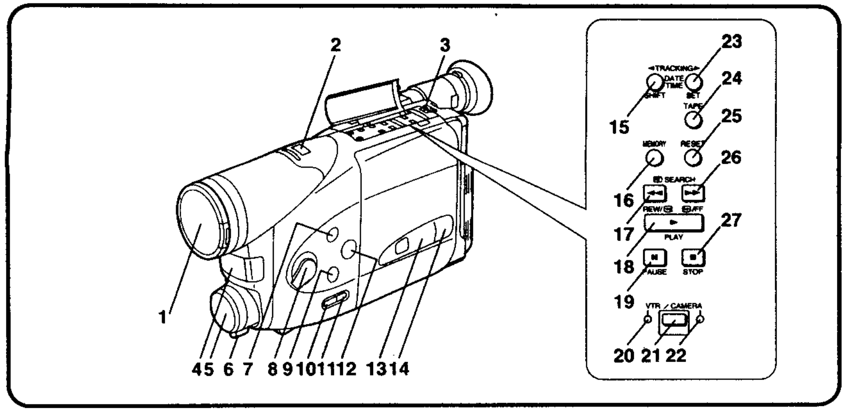
❶ The Condensation Indication "U10/[▲]" in the Viewfinder flashes.
(A few seconds later, the Movie Camera automatically turns itself off.)
❷ When turning on the Movie Camera, it turns itself off.
(However; the Movie Camera also turns off when the Battery Pack is exhausted!)

■ Remedy

1. Wait a few hours before operating the Movie Camera again. (The actual time depends on the surrounding conditions.)
2. Turn on the Movie Camera.
3. Confirm that the Condensation Indication is not displayed any more.
4. For added safety, wait about 1 more hour.

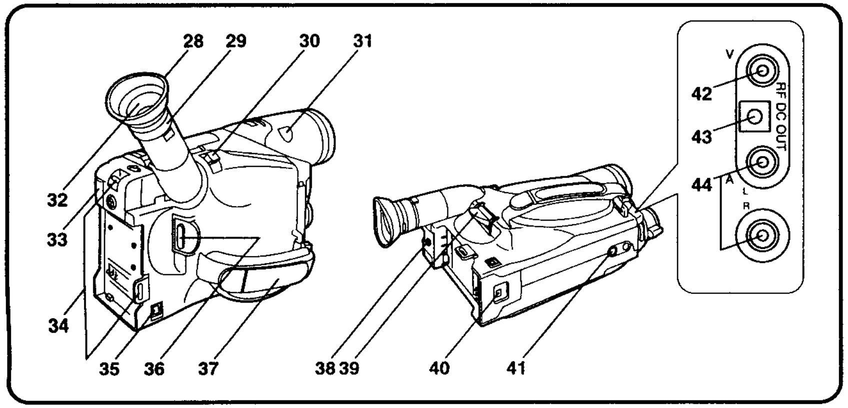
■ Notes about Condensation

- Condensation can form when the Movie Camera is suddenly brought from cold surroundings to a place which is hot or humid. To prevent condensation from forming in such a case, keep it in a tightly closed plastic bag or something similar for 1 to 2 hours before shooting or storing the Movie Camera at the new place.
- Since condensation forms gradually, there may already be some condensation inside the Movie Camera even before the Condensation Indication begins to flash.
- In an extremely cold place, condensation may freeze and turn into frost. As the Movie Camera cannot detect frost, the Condensation Indication does not appear until the frost melts and turns into condensation.



Controls and Components

1 Lens Cap
2 White Balance Sensor
3 [▲ EJECT] Lever
4 Microphone
5 Focus Ring
6 [IMAGE STABILIZER] Selector
7 [BACKLIGHT] Button
8 [AE] Selector
9 [DATE/TIME] Button
10 [FOCUS] Button
11 [W.B] Button
12 [FADE] Button
13 Cassette Compartment Cover
14 Cassette Compartment [LOCK] Button
15 [DATE/TIME/SHIFT • ◄ TRACKING] Button
16 [MEMORY] Button
17 [◄◄] Button
18 [►] Button
19 [❚❚] Button
20 "VTR" Indication Lamp
21 [VTR/CAMERA] Button
22 "CAMERA" Indication Lamp
23 [DATE/TIME/SET • TRACKING ►] Button
24 [TAPE] Button
25 [RESET] Button
26 [►►] Button
27 [■] Button



28 Eyecup
29 Eyepiece Corrector Ring
30 [W • T] Zoom Lever
31 [MIC] Socket
32 Viewfinder
33 [BATT. EJECT] Button
34 Shoulder Strap Holders
35 [DC IN] Socket
36 Start/Stop Button
37 Grip Belt
38 [EDIT] Socket
39 [POWER] Switch
40 [POWER SAVE] Switch
41 Tripod Receptacle
42 [VIDEO OUT] Socket
43 [RF DC OUT] Socket
44 [AUDIO OUT L/R] Sockets

BATTERY PACK

■ Charging Time and Maximum Time for Continuous Shooting and Manual Operation

Battery Pack No.	Charging Time	Max. Continuous Shooting Time
Supplied	Approx. 60 min.	Approx. 40 min.
VW-VBS10E	Approx. 65 min.	Approx. 45 min.
VW-VBS20E	Approx. 130 min.	Approx. 90 min.
VW-VBH10E	Approx. 80 min.	Approx. 55 min.
VW-VBH20E	Approx. 160 min.	Approx. 110 min.

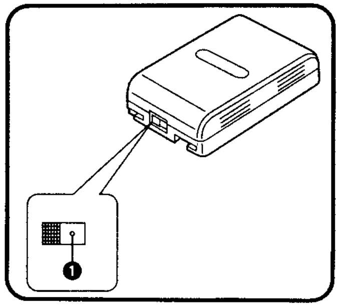
Notes:

- The use of the zoom and other functions increases the power consumption, so that the actual recording time per Battery Pack may actually be 30%–50% less than the max. continuous shooting time listed above.
- Do not dispose of the exhausted Battery Pack with your household waste. When purchasing a new Battery Pack, return the old Battery Pack to your dealer for environmentally correct disposal.

How to charge a Battery Pack if its operation time has become too short for practical use, or if it has been stored for a long time:
Continue charging for 24 hours even after the Charging Indication Lamp on the AC Adaptor goes out.
(If this does not result in an operation time sufficient for practical use, the service life of this Battery Pack has reached its end. Replace it with a new one.)

■ How to Use the Charge Confirmation Marker

Use this marker to distinguish between charged and discharged Battery Packs.
For example, slide the knob so that the dot ❶ is visible after the charging is completed.



Precautions for the Battery Pack

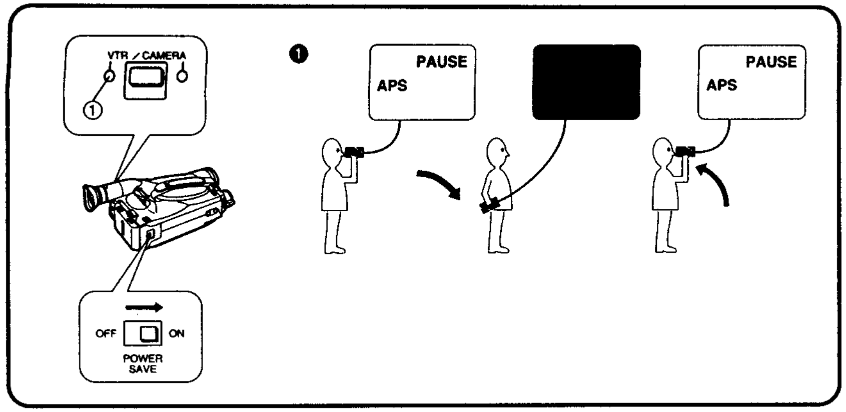
■ Cautions for Use

- Do not try to disassemble or reconstruct it.
- Do not throw the exhausted Battery Pack into a fire.
- Make sure that no metal objects touch the connectors of the Battery Pack.
  (When carrying it in a bag or similar, take care that keys, coins, etc. do not contact it.)
- For charging, be sure to use only the specially designed AC Adaptor or Car Battery Charger.
- When the operation time even after proper charging is too short for normal use, the service life of the Battery Pack has reached its end. (It can be charged approx. 200 times.)
- During use, it may become warm. However, this is normal and not a malfunction.
- Do not leave it in places with high temperature, e.g. exposed to direct sunlight.
- When the Battery Pack has become exhausted and the Movie Camera has turned off automatically, remove the Battery Pack before connecting the DC Input Cable from the AC Adaptor to the Movie Camera, otherwise the Movie Camera cannot be turned on.
- Do not dispose of the exhausted Battery Pack with your household waste. When purchasing a new Battery Pack, return the old Battery Pack to your dealer for environmentally correct disposal.

Precautions for the AC Adaptor

■ Cautions for Use

- Before connecting the AC Adaptor to a mains outlet, confirm that the local AC mains voltage and frequency and within the voltage and frequency range specified on the rating plate.
- Do not use it for any purpose other than supplying the Movie Camera with power and charging the Battery Pack.
- Do not operate it very close to a radio, TV etc.
  (Reception may be distorted.)
- When unplugging the Mains Cable, pull it by the plug, not by the cable.
- Do not bend the cables excessively.
- Do not expose the cables to high temperature and chemicals.
- Do not handle the AC Adaptor with wet hands.
- Before cleaning the AC Adaptor, make sure that it is disconnected from the AC mains socket.



4 How to Use the POWER SAVE Switch

If you set the [POWER SAVE] Switch to "ON", the "APS" Indication is displayed in the Viewfinder, and the Auto Power Save Function and the Anti-Ground-Shooting Function prevent you from wasting battery power and from the accidentally shooting the ground when you forget to stop shooting.
When you don't want to use these functions, set the [POWER SAVE] Switch to "OFF".

When changing locations between scenes or when not planning to shoot for a longer period of time, it is recommended to turn off the Movie Camera with the [POWER] Switch.

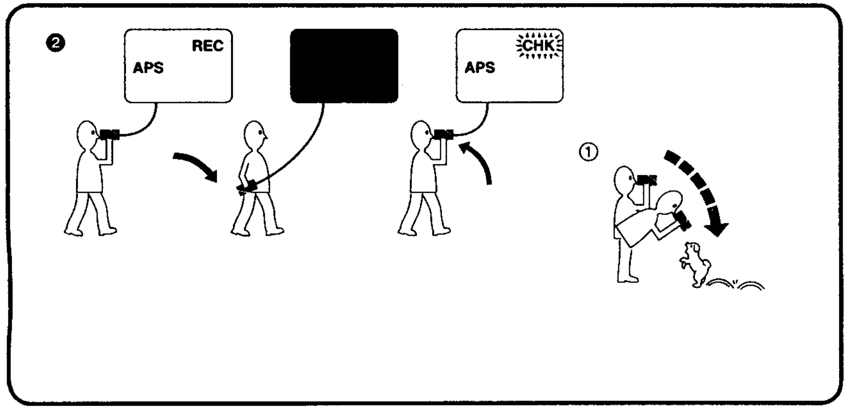
❶ Auto Power Save Function
(in the Shooting Pause Mode)
- The Battery Pack can be used longer for shooting.
- The Movie Camera automatically prevents shooting even when the Start/Stop Button is pressed accidentally.

When you tilt the Movie Camera downwards by more than about 70° from the normal horizontal shooting position for more than a few seconds, the Viewfinder turns off and the "VTR" Indication Lamp ① flashes.

■ To Resume Shooting

When you return the Movie Camera to an approximately horizontal position, the Movie Camera is again in the Shooting Pause Mode and you can restart shooting by pressing the Start/Stop Button.

Notes:
- When the Auto Power Save Function becomes activated, the Auto Focus and the Zoom Motor do not work.
- When you restart the shooting after this function was activated, the Auto White Balance Adjustment may not be precise for the first few seconds.



❷ Anti-Ground-Shooting Function
(in the Shooting Mode)
- The Battery Pack can be used longer for shooting.
- The Movie Camera automatically switches over to the Shooting Pause Mode to stop the unintentional shooting when you forget to press the Start/Stop Button at the end of a scene.

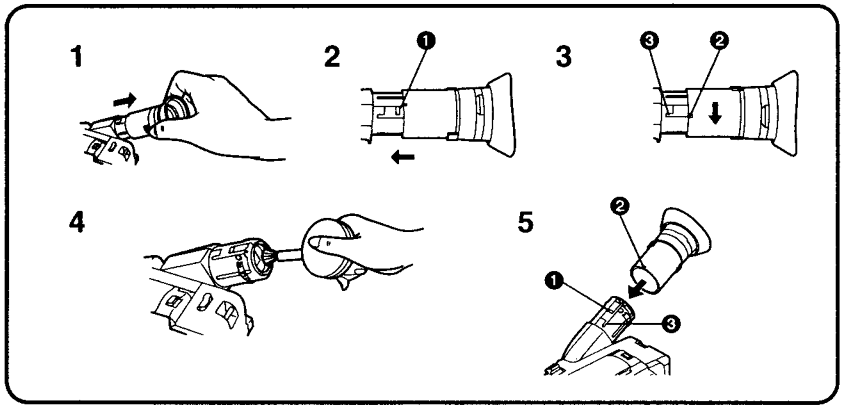
When you tilt the Movie Camera downwards by more than about 70° from the normal horizontal shooting position for more than a few seconds, and:
1) walk with the Movie Camera held in the hand or;
2) tilt the Movie Camera quickly downwards when not walking;

the Viewfinder turns off and the "VTR" Indication Lamp flashes.

■ To Resume Shooting

When you return the Movie Camera to an approximately horizontal position, the "CHK" (=check) Indication flashes in the Viewfinder. Since the shooting may have continued for several seconds, rewind the tape a little using the Camera Search Function to locate the exact end of the last desired scene, and then start shooting again.

Notes:
- The Anti-Ground Shooting Function is designed so that it does not become activated when you tilt the Movie Camera slowly downwards during shooting, as shown above ①.
- This function is not intended to replace the manual stopping of shooting.
- When this function becomes activated, the Auto Focus and the Zoom Motor do not work.
- When you restart shooting after this function became activated, the Auto White Balance Adjustment may not be precise for the first few seconds.



Cleaning

1 How to Clean the Viewfinder

1 **Grasp the projections on either side of the Viewfinder and fully extend it.**

2 **Push the Viewfinder back approx. 3 mm so that its front edge is precisely aligned with the notch ❶.**

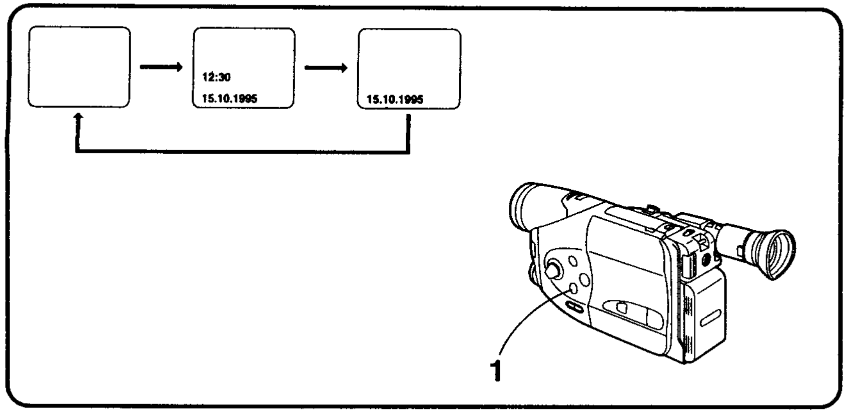
3 **Turn the Viewfinder counterclockwise so that the mark ❷ is aligned with the line ❸ and pull it off.**
- While turning it, some increased resistance can be felt; however, be sure to turn it to the line ❸.

4 **Remove dust with a blower brush.**

5 **To re-attach the Viewfinder, align the mark ❷ with the line ❸, slip the Viewfinder on as far as the notch ❶ and turn it clockwise.**

2 How to Clean the Movie Camera

Notes:
1. Do not use benzine, thinner or other chemicals for cleaning, because they could change the colour and damage the surface of the camera body.
2. When using a chemically treated cloth for cleaning, carefully follow the instructions for its use.
   - Wipe the Movie Camera with a clean, dry cloth. Never use cleaning fluid or other chemicals.
   - Clean the lens only with a blower brush (used for photo cameras) or special lens cleaning tissue (used for glasses and cameras).



- **If you Make a Mistake during Setting, Restart from Step 3.**
- **Changing the Figures of the Date/Time Indication**

By pressing the [SET] Button repeatedly, the Date/Time Indication can be changed in the following order:

Year:	1990→1991→ ...... →2089→1990→...
Month:	1→2→ .... →12→1→...
Day:	1→2→ .... →31→1→...
Hour:	0→1→ .... →23→0→...
Minute:	00→01→ .... →59→00→...

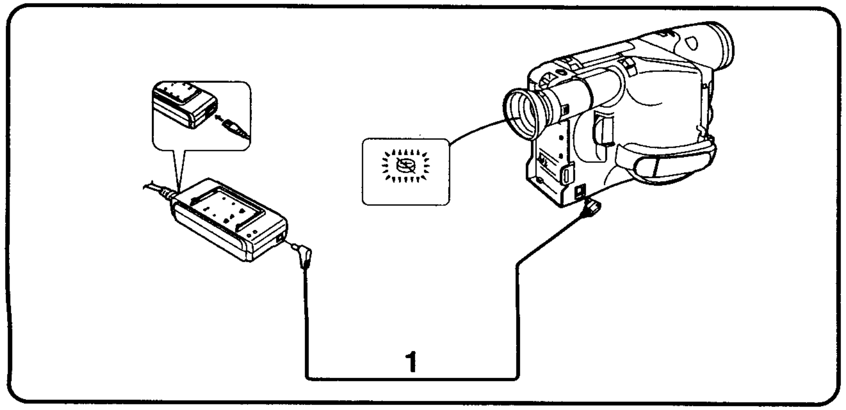
[2] Inserting and Deleting the Date and Time

You can insert (and delete) the Date and Time Indications during shooting and when in the Shooting Pause Mode.

1 Press the [DATE/TIME] Button.

- By pressing this button repeatedly, you can change the Date/Time Indication in the Viewfinder in the following order. Select the desired indication.

12:30
→No indication→15.10.1995→15.10.1995
Date and Time Date only



[3] The Built-in Lithium Battery

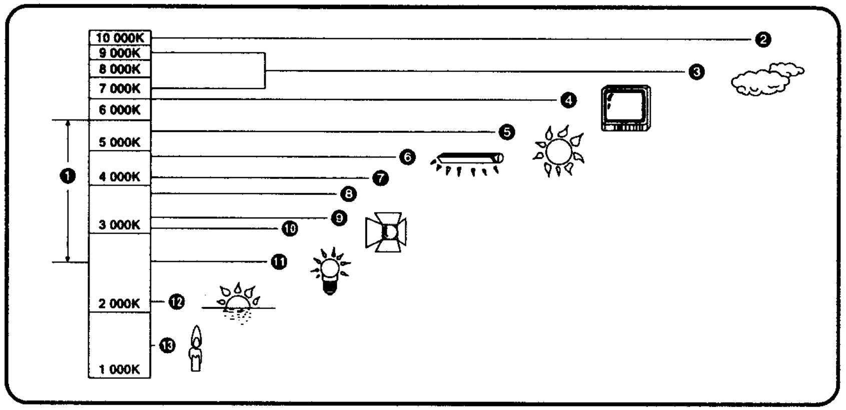
A built-in rechargeable lithium battery maintains the operation of the built-in clock when the Movie Camera is turned off. When the Movie Camera is in operation, this battery is charged automatically.
However, if the Movie Camera is not used for a very long time, the lithium battery can become exhausted. In this case, the "⊗" Indication in the Viewfinder flashes and the date returns to the initial Indication "1.1.1990".

- **How to Charge the Built-in Lithium Battery**

If the "⊗" Indication in the Viewfinder flashes for approx. 10 seconds when you turn the Movie Camera on, the lithium battery is exhausted and must be charged as explained below.

1 Connect the Movie Camera to the AC Adaptor.

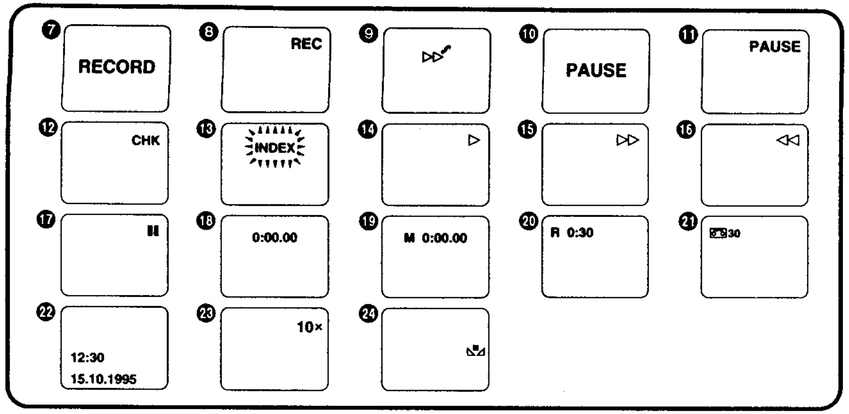
- After the lithium battery has been charged for approx. 4 hours, it can maintain the operation of the clock for approx. 3 months.



Colour Temperature and White Balance

The colour temperature of the light source is measured in Kelvin (K). The higher the Kelvin value is, the more bluish is the light; the lower the value, the more reddish is the light. This is not directly related to the brightness. The table shows the relationship between natural light, artificial light and colour temperature.

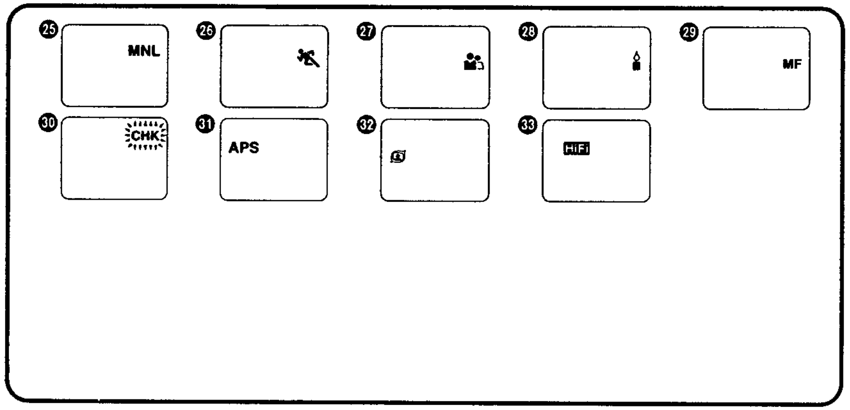
❶ Control range of the Auto White Balance Function
❷ Blue sky
❸ Cloudy sky (rain)
❹ TV screen
❺ Sunlight
❻ White fluorescent lamp
❼ 2 hours after sunrise or before sunset
❽ 1 hour after sunrise or before sunset
❾ Halogen light bulb
❿ 30 minutes after sunrise or before sunset
⓫ Incandescent light bulb
⓬ Sunrise or sunset
⓭ Candlelight



⑦
RECORD
⑧
REC
⑨
⑩
PAUSE
⑪
PAUSE
⑫
CHK
⑬
INDEX
⑭
⑮
⑯
⑰
⑱
0:00.00
⑲
M 0:00.00
⑳
R 0:30
㉑
30
㉒
12:30
15.10.1995
㉓
10×
㉔

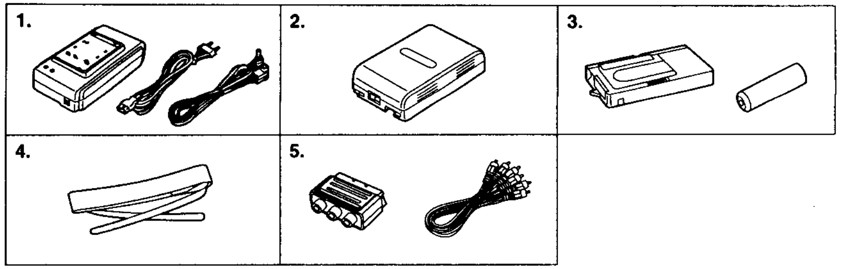
- **Shooting and Playback Indications**

⑦ Shooting Mode (large indication)
⑧ Shooting Mode (small indication)
⑨ Tape Run Mode
⑩ Shooting Pause Mode (large indication)
⑪ Shooting Pause Mode (small indication)
⑫ Recording Review Mode
⑬ Recording of Index Signal
⑭ Playback/Camera Search Mode
⑮ Fast Forward/Cue Mode
⑯ Rewind/Review/Camera Search Mode
⑰ Still Playback Mode
⑱ Tape Counter
⑲ Tape Counter with activated Memory Stop Function
⑳ Remaining Tape Time
㉑ Tape Length
㉒ Date and Time
㉓ Zoom Magnification
㉔ Manual White Balance Mode



㉕
MNL
㉖
㉗
㉘
㉙
MF
㉚
CHK
㉛
APS
㉜
㉝
HiFi

㉕ Manual Shooting Mode
㉖ Sports Mode
㉗ Portrait Mode
㉘ Low Light Mode
㉙ Manual Focus Mode
㉚ Anti-Ground-Shooting Check
㉛ Power Save Mode
㉜ Image Stabilizer Mode
㉝ HiFi Mode



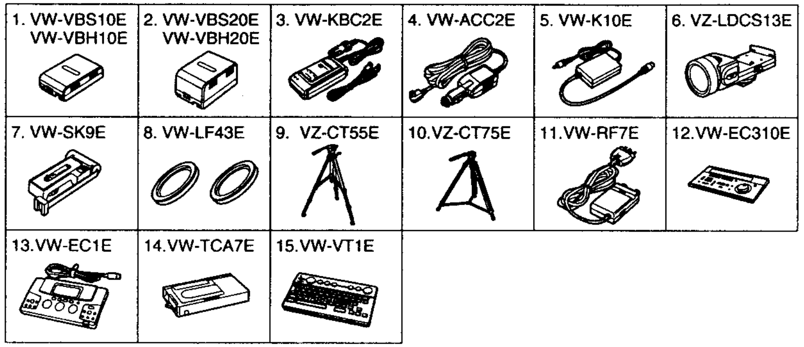
Before Shooting

1 Standard Accessories

1. **AC Adaptor**
   For supplying power to the Movie Camera or for charging the Battery Pack
   DC Input Cable and AC Mains Cable
   For connection to the AC Adaptor
2. **Battery Pack**
   For supplying power to the Movie Camera
3. **Cassette Adaptor and Battery**
   For playback on a VTR
4. **Shoulder Strap**
5. **21-pin Adaptor and Audio/Video Cable**
   For connection to a TV set or VTR

Notes:
1. Before connecting, confirm that all systems are turned off and that the connection cables are not damaged.
2. Do not expose the connection cables to high temperature, chemicals and objects with sharp edges; also do not bend the cables excessively.
3. Do not connect the cables with wet hands.
4. When unplugging the Mains Cable, pull it by the plug, not by the cable.

CAUTION:
TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.



1. VW-VBS10E
VW-VBH10E
2. VW-VBS20E
VW-VBH20E
3. VW-KBC2E
4. VW-ACC2E
5. VW-K10E
6. VZ-LDCS13E
7. VW-SK9E
8. VW-LF43E
9. VZ-CT55E
10.VZ-CT75E
11.VW-RF7E
12.VW-EC310E
13.VW-EC1E
14.VW-TCA7E
15.VW-VT1E

ENGLISH

Optional Accessories

1. VW-VBS10E (Ni-Cd Battery Pack)
   VW-VBH10E (Ni-MH Battery Pack)
2. VW-VBS20E (Ni-Cd Battery Pack)
   VW-VBH20E (Ni-MH Battery Pack)
3. Car Battery Charger
4. Car Battery Cord
5. 5-Pin Synchro Cord
6. Video DC Light
7. Shoe Adaptor
8. Filter Kit
9. Standard Tripod
10. Deluxe Tripod
11. RF Adaptor
12. Editing Controller
13. Editing Controller
14. Cassette Adaptor
15. Video Titler

Notes:
- Some accessories are not available in some countries.
- To mount the Video DC Light on the Movie Camera, the Shoe Adaptor (optional) is necessary.

Special Notice Sentences

Shooting

If you leave the Movie Camera in the Shooting Pause Mode for more than 6 minutes, it automatically switches off to protect the tape and to conserve Battery Pack power. This condition is called "Recording Lock" (the tape remains in contact with the video heads).
To resume shooting from this condition, turn in the [POWER] Switch (the Movie Camera switches off) and then turn it out again.
If you leave the Movie Camera in the Recording Lock Mode for more than 48 hours, the Recording Lock Mode is cancelled and the Movie Camera automatically switches itself off. You can hear the motor operating when this happens.

■ Index Signals (VISS)

The "INDEX" Indication flashes briefly in the Viewfinder while an index signal is being recorded. Index signals let you use the VHS Index Search or Intro Scan Function when playing back the tape on a VTR equipped with these functions.

An index signal is recorded automatically in the following cases:

- When you start recording for the first time after attaching the Battery Pack.
- When you restart recording after exchanging a Video Cassette or after pressing the [VTR/CAMERA] Button.

Check Recorded Scenes while in the Shooting Pause Mode.

Look in the Viewfinder and press the [◀◀] Button at the same time.

- The "CHK" Indication appears in the Viewfinder. The final 2 seconds of the last recorded scene are played back in the Viewfinder before the Movie Camera returns to the Shooting Pause Mode. "CHK" means Check.

How to Eliminate Picture Distortions by Adjusting the Tracking

■ Purpose of the Tracking Adjustment

When playing back a recorded tape, especially a tape recorded on another Movie Camera, horizontal white streaks ❶ may appear in the picture. This occurs when the video heads don't precisely trace the recorded video tracks during playback. Adjusting the tracking pattern of the heads is called tracking adjustment.

1 **Press both the [◀ TRACKING] and the [TRACKING ▶] Button simultaneously.**

Note:
If pressing both buttons simultaneously does not improve the picture quality, adjust by pressing the [◀ TRACKING] or [TRACKING ▶] Button individually. (It may not be possible to remove the noise bars completely.)

(Camera Search Function)

■ How to Add a New Scene at the End of a Previously Shot Scene

The following operation steps assure smooth scene-to-scene transitions.

In the Shooting Pause Mode:

1 Keep pressing the [▶▶] Button (or the [◀◀] Button) for more than 1 second to search for the point where the new recording is to be joined, and release the button as soon as this point is found.

❶ When keeping the [◀◀] Button pressed:
- The Indication "◁◁" appears in the Viewfinder.
- The scene is played back in reverse direction at 3 times normal speed.

❷ When keeping the [▶▶] Button pressed:
- The Indication "▷" appears in the Viewfinder.
- The scene is played back in forward direction at normal speed.

2 Press the Start/Stop Button.
- You have started shooting the new scene which is smoothly joined to the previously recorded scene.

■ If the Video Cassette Was Taken out After Shooting the Last Scene:

Reinsert the Video Cassette. Press the [VTR/CAMERA] Button so that the "VTR" Indication Lamp lights, and then perform the above operation step 1.
After you have located the tape position at which the new recording is to be joined, press the [VTR/CAMERA] Button so that the "CAMERA" Indication Lamp lights. Next, perform the above operation step 2.

How to Use the Car Battery Cord (optional)

Notes:
1. The Car Battery Cord can only be used with 12 V DC negative-grounded vehicles.
2. Do not start the car engine while the Movie Camera is powered by the car battery.
3. If the voltage drops suddenly, e.g. when the heater in the car is turned on, the Movie Camera automatically turns off to protect it. Wait about 10 seconds before turning it on again.

How to Confirm the Remaining Tape Time

Notes:
1. The Remaining Tape Time is not displayed until you start shooting or playing back.
2. While the Movie Camera calculates the Remaining Tape Time, the "R" Indication flashes in the Viewfinder. "R" means Remaining.
3. When the Remaining Tape Time becomes less than 2 minutes, the "R" Indication and the Remaining Tape Time Indication start to flash.
4. When using a video cassette bearing the "P" mark ❶ or an S-VHS-C video cassette, the Tape Counter Indication may not be very precise.

1 Press the [TAPE] Button.
- Select the Tape Length Indication ("📼 30" or "📼 45") that matches the video cassette being used.
- During shooting and playback, the remaining tape time is displayed in minutes instead of the Tape Length Indication "📼 30" or "📼 45".

■ To Check the Tape Length of the Video Cassette Being Used While the Remaining Tape Time Is Displayed:

Press the [TAPE] Button.
- The Tape Length Indication "📼 30" or "📼 45" is displayed for approx. 2 seconds before the Remaining Tape Time Indication is displayed once more.

Power Zooming

Notes:
1. The zoom range extends from 1× to 10×.
2. The zooming speed changes according to how far you push the [W • T] Zoom Lever (the farther it is pushed toward either the "W" or "T" position, the faster the zooming speed becomes).
3. In the maximum telephoto setting (when you have zoomed in), you can adjust the focus only for subjects that are more than 1.5 m from the lens.

■ Using the Macro Close-up Function

After keeping the [W • T] Zoom Lever pressed toward "W" to zoom to the maximum wide-angle setting, the Movie Camera can automatically focus subjects down to a minimum distance of only 5 mm between lens and subject.

Notes:
1. As the depth of field is very small in the Tele Mode, even slight camera movements can cause the subject to go out of focus. Therefore, it is recommended to use a tripod (optional).
2. When shooting pictures in a photo album or a similar situation with insufficient lighting, use a Video DC Light (optional).

Image Stabilizer

Notes:
1. When using the Image Stabilizer Function, the shutter speed is automatically adjusted to 1/125 s.
2. Cancelling the Image Stabilizer Function also resets the shutter speed to 1/50 s. However, after selecting the Sports Mode or the Portrait Mode, cancelling the Image Stabilizer Function does not reset the shutter speed to 1/50 s.

Focus

- For the following subjects and shooting situations, however, the Manual Focus Mode (→ **68**) should be used.

① A subject with shiny surfaces or much light reflection.
② A subject behind glass that is covered with dirt, dust or water drops.
③ A subject with a part of it near the Movie Camera and another part far away from it.
④ A flat surface, e.g. a white wall.
⑤ An oblique subject.

- A fast-moving subject.
- A subject with a dark surface.
- When using the Macro Close-up Function, special lenses or filters.

■ Using the Sports Mode

In the Sports Mode, the shutter speed is automatically adjusted (between 1/50 s and 1/500 s) according to the brightness of the subject, so images are sharp and stable even when shooting fast movements.
When you play back scenes recorded in the Sports Mode on a VTR, you can enjoy still and slow motion playback with very sharp, detailed images.

Notes:
1. The subject must be brightly lit by sunlight or other strong light, with little shade.
2. When shooting under fluorescent, mercury-vapor or natrium lamps, the picture will be adversely influenced by flickering.
3. When a scene shot in the Sports Mode is played back in the normal playback mode, the picture movement may not be as smooth as it usually is.
4. If you shoot under weak lighting, the " 🏃 " Indication flashes to warn you that the Sports Mode may not be effective.

1 Set the [AE] Selector to " 🏃 " (Sports Mode).
- The " 🏃 " Indication appears in the Viewfinder.

■ To Return to the Normal Shooting Mode
Reset the [AE] Selector to "AUTO".

■ Using the Portrait Mode

In the Portrait Mode, the iris is automatically set to the maximum aperture for a very small depth-of-field. This gives you a sharply focused subject in the centre of the picture with a blurred background and foreground.

■ Using the Low Light Mode

Note:
Even if you use this mode for outdoor shooting in the daytime, the result will be almost the same as when shooting in the normal mode.

■ Using the Backlight Shooting Function

Notes:
1. The sky may appear whitish.
2. When shooting with the sun striking the subject at an angle, star-shaped light reflexes may be recorded in the picture.
3. When shooting a subject in front of a very bright background, the subject may still appear dark in the picture.

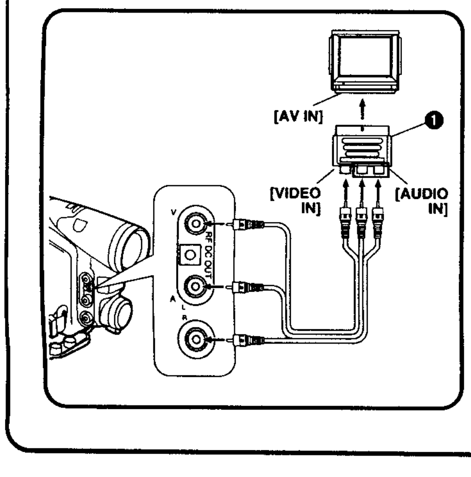
How to View Playback on Your TV Set

Note:
If your TV set is not equipped with an AV Input Socket, the RF Adaptor (VW-RF7E; optional) is necessary. To connect, read the RF Adaptor's operating instructions. The [RF DC OUT] Socket supplies the RF-Adaptor with power.

■ Playback on a TV Set featuring a 21-pin AV Input Socket

Note:
Turn off both the Movie Camera and the TV set.

Connect with the supplied 21-pin Adaptor ❶ and Audio/Video Cable, as shown above.



Before Requesting Service

Power Source

Symptom	Cause	Action	Page
• Movie Camera does not turn on.	• Battery Pack is not attached.	• Attach it correctly.	12
	• Battery Pack is not charged.	• Charge it.	8
	• AC Adaptor is not connected.	• Connect AC Adaptor correctly to Movie Camera.	42
• Movie Camera turns off soon.	• Battery Pack is exhausted.	• Use a fully charged one.	8
	• Shooting was paused for more than 6 minutes.	• Turn in [POWER] Switch to turn off Movie Camera, and then turn it out again.	20
	• Condensation has formed inside.	• Wait several hours.	82

Shooting

• No picture appears in the Viewfinder.	• [POWER] Switch is turned in.	• Turn it out.	20
	• Lens Cap is on the Lens.	• Remove it.	16
	• Power Save Function has become activated.	• Hold Movie Camera in horizontal position.	26
• Indication in the Viewfinder are not clear.	• Viewfinder is not extended.	• Extend it.	18
	• Eyepiece Corrector is not adjusted.	• Adjust it.	18
	• Lens in Eyepiece is covered with dust or dirt.	• Clean lens in Eyepiece.	40
• Shooting cannot be started.	• Tab of inserted Video Cassette is broken out.	• Cover tab hole with adhesive tape.	38
	• No Video Cassette is inserted.	• Insert a Video Cassette with intact erasure prevention tab.	16
	• Tape has reached its end.	• Insert a new Video Cassette.	16
• Date and time cannot be recorded.	• Date and time have not been set.	• Set date and time.	48
• Date and time are not displayed in the Viewfinder.	• [DATE/TIME] Button was not pressed.	• Press [DATE/TIME] Button.	50
	• Built-in Lithium Battery is exhausted.	• Charge built-in Lithium Battery.	52

Playback

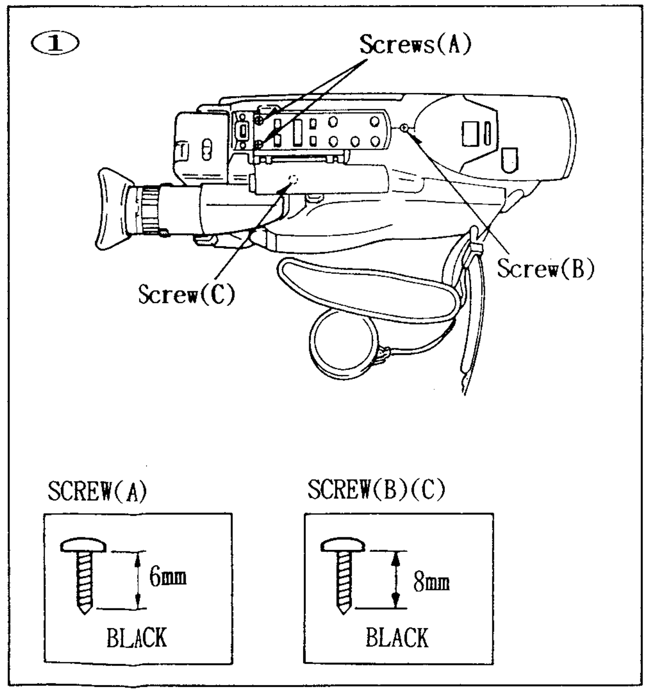
• No playback picture is reproduced.	• [POWER] Switch is turned in.	• Turn it out and press [VTR/CAMERA] Button so that "VTR" Indication Lamp lights up.	30
	• Movie Camera is not connected to TV set or it is connected incorrectly.	• Connect Movie Camera to TV set correctly.	74
	• Wrong channel is selected on TV set.	• Select correct channel.	—
• Picture is not in colour.	• Colour adjustment on TV set is not made properly.	• Adjust colour control on TV set.	—
• Picture is not in colour or is distorted.	• Tracking is not adjusted correctly.	• Adjust tracking on Movie Camera.	34
• Picture contains noise bars.	• Cue, Review or Still Playback is being performed.	• This is not a malfunction.	36

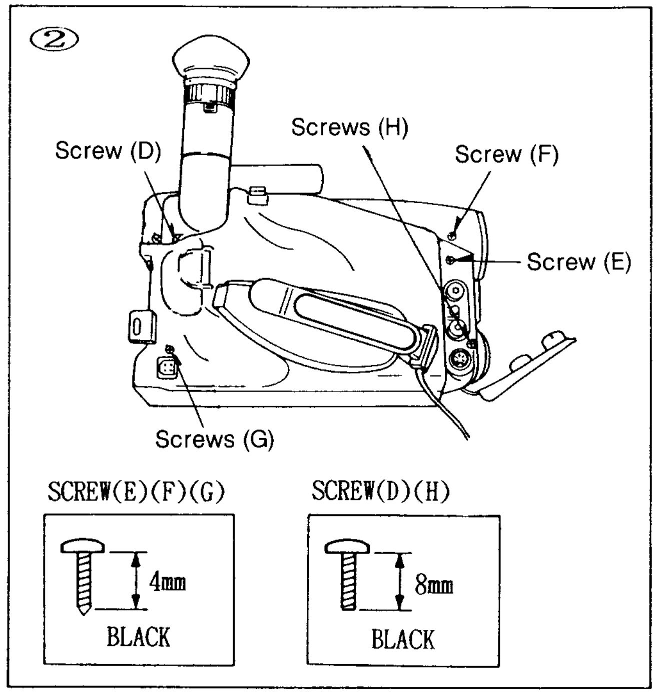
SECTION 2
ADJUSTMENT PROCEDURES

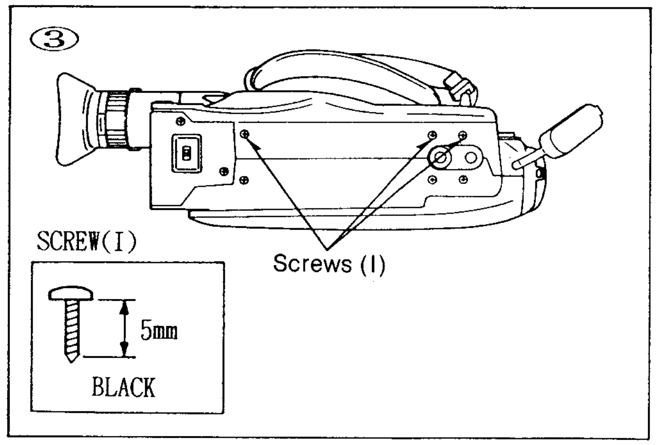
2-1. DISASSEMBLY PROCEDURES

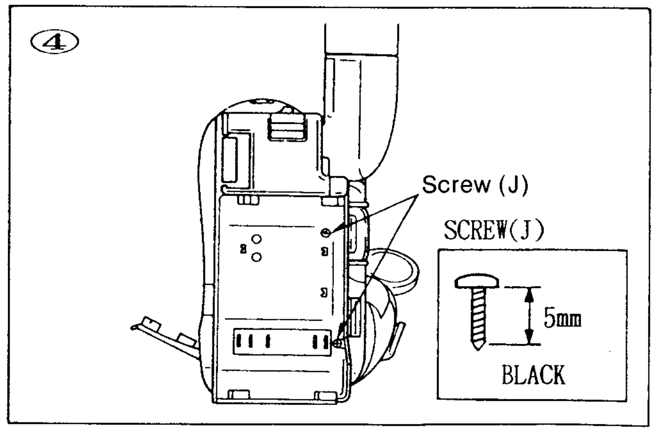
Flow-Chart for Disassembly Procedure

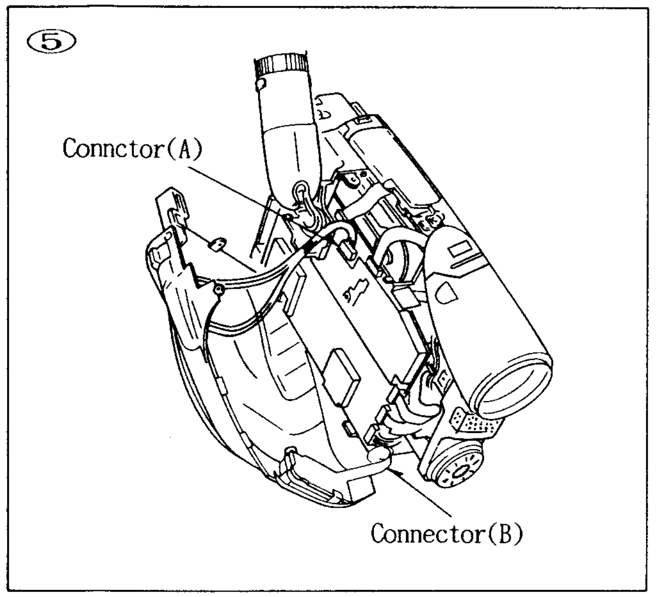
NBR	ITEM/PART	Fig.	Removal(SCREW)
【1】	Side Case (L).	①	2-SCREW (B/C)
		②	4-SCREW (D/E/G/H)
		③	3-SCREW (I)
		④	1-SCREW (J)
		⑤	*Slightly open* the side case (L). Disconnect(Connector A/B).
【2】	Cassette Cover	⑥	2-SCREW (K)
【3】	Side Case (R). & LENS-COVER	①	2-SCREW (A)
		②	1-SCREW (F)
		⑦	Disconnect(Connector C/D/E/F) 1-SCREW (L) Unlock---2 LOCKING TAB(A)
		⑧	1-SCREW (M) Unlock---4 LOCKING TAB(B/C)
		⑨	3-SCREW (N)
【4】	EVF-Unit	⑩	1-SCREW (O)
		⑪	Disconnect(Connector G) Unlock---1 LOKING TAB(D) 1-SCREW (P)
		⑫	Slide the EVF unit.
【5】	Main C.B.A.	⑬	2-SCREW (Q) Disconnect(Connector H/I/J/K/L/M)
		⑭	Disconnect(Connector N)
【6】	DRIVE C.B.A.	⑮	2-SCREW (R) Disconnect(Connector O/P)
【7】	Lens-Unit	⑯	2-SCREW (S)

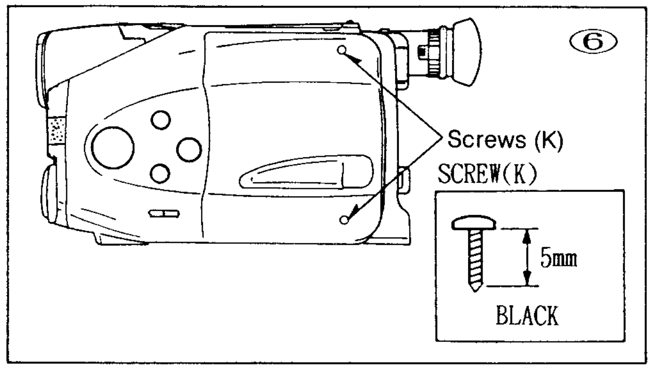

①
Screws(A)
Screw(B)
Screw(C)
SCREW(A)
6mm
BLACK
SCREW(B)(C)
8mm
BLACK

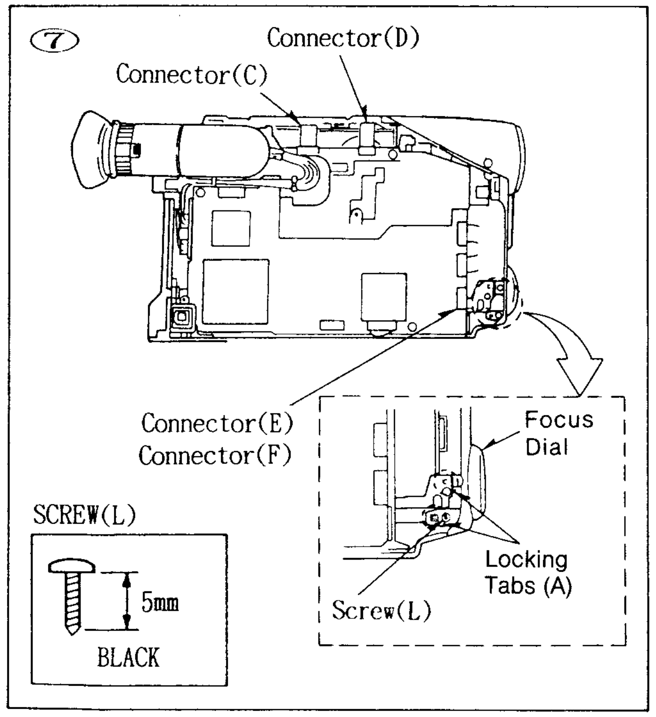

②
Screws (H)
Screw (D)
Screw (F)
Screw (E)
Screws (G)
SCREW(E)(F)(G)
4mm
BLACK
SCREW(D)(H)
8mm
BLACK

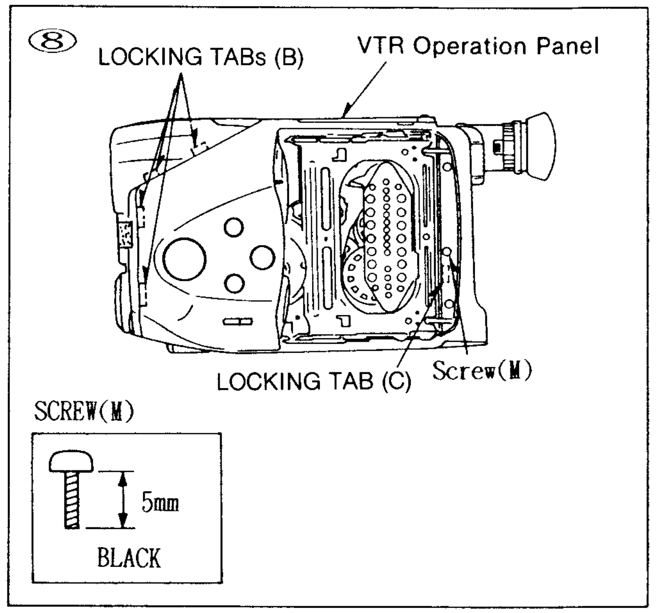

③
SCREW(I)
5mm
BLACK
Screws (I)

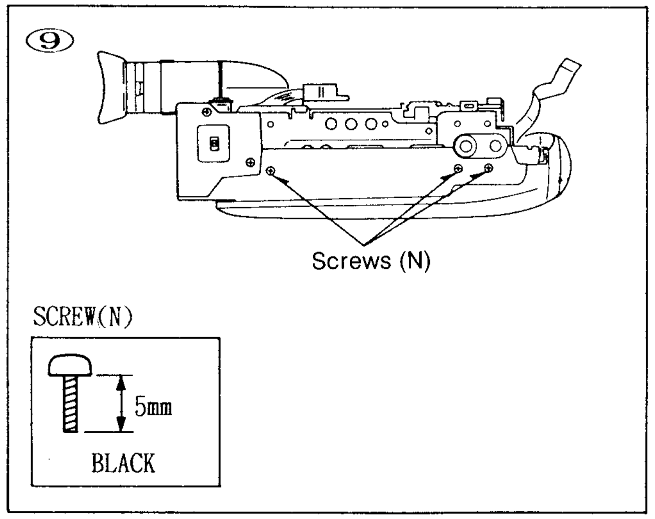

④
Screw (J)
SCREW(J)
5mm
BLACK

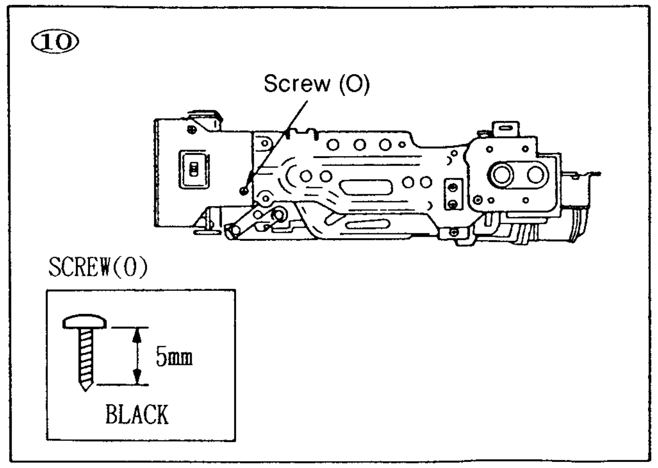

⑤
Connctor(A)
Connector(B)


⑥
Screws (K)
SCREW(K)
5mm
BLACK

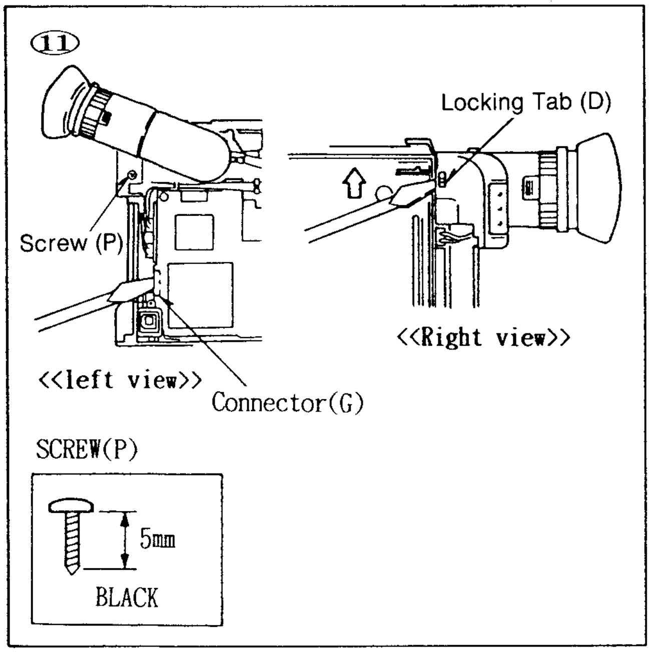

⑦
Connector(D)
Connector(C)
Connector(E)
Connector(F)
Focus Dial
Locking Tabs (A)
Screw(L)
SCREW(L)
5mm
BLACK


⑧
LOCKING TABs (B)
VTR Operation Panel
LOCKING TAB (C)
Screw(M)
SCREW(M)
5mm
BLACK

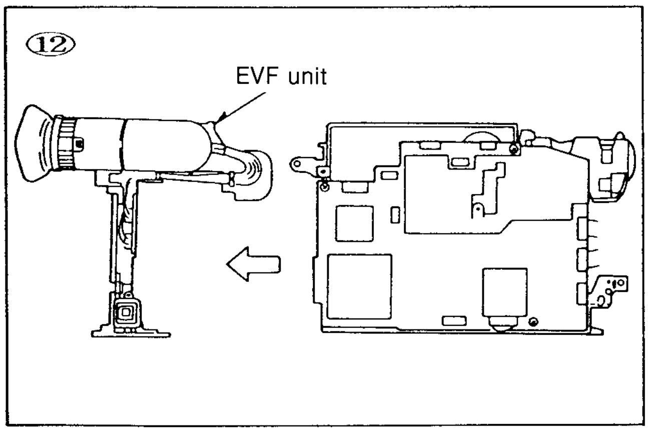

⑨
Screws (N)
SCREW(N)
5mm
BLACK


⑩
Screw (O)
SCREW(O)
5mm
BLACK

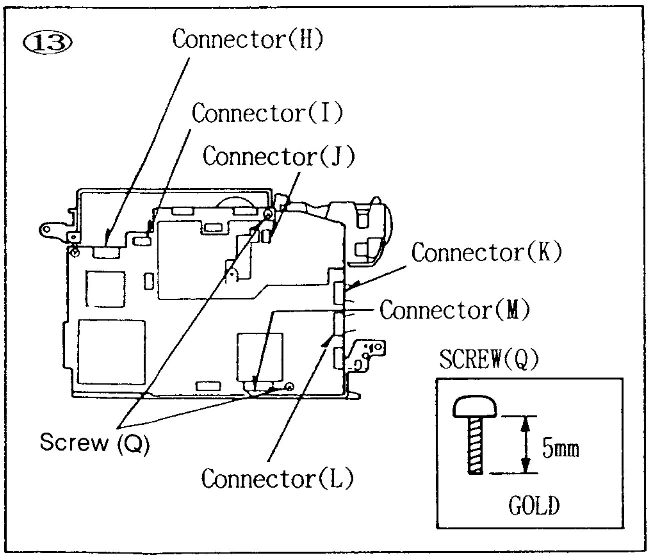
⑪


Locking Tab (D)
Screw (P)
<<Right view>>
<<left view>>
Connector(G)
SCREW(P)
5mm
BLACK

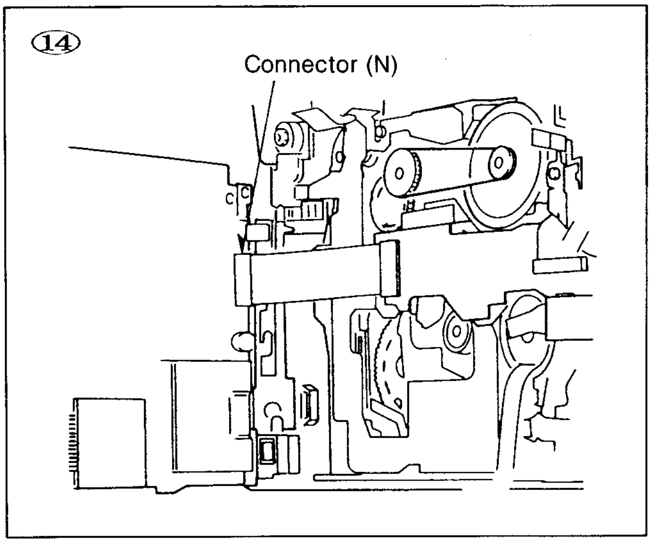
⑫


EVF unit

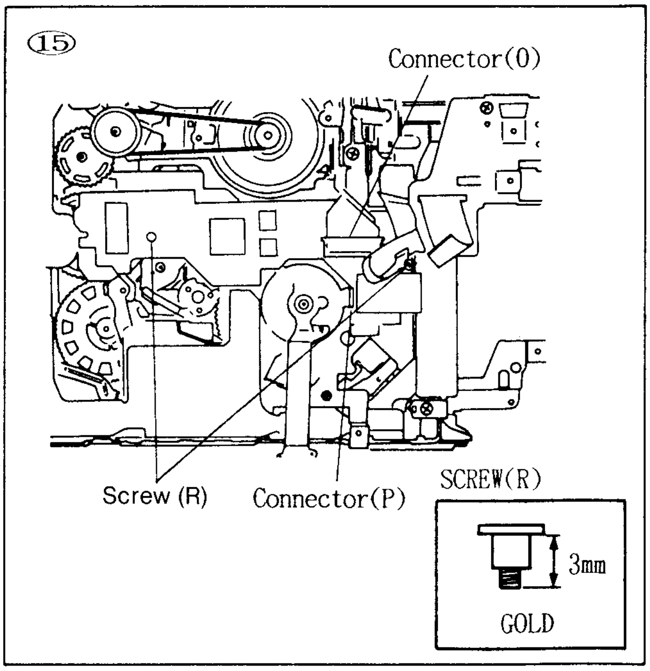
⑬


Connector(H)
Connector(I)
Connector(J)
Connector(K)
Connector(M)
SCREW(Q)
Screw (Q)
Connector(L)
5mm
GOLD

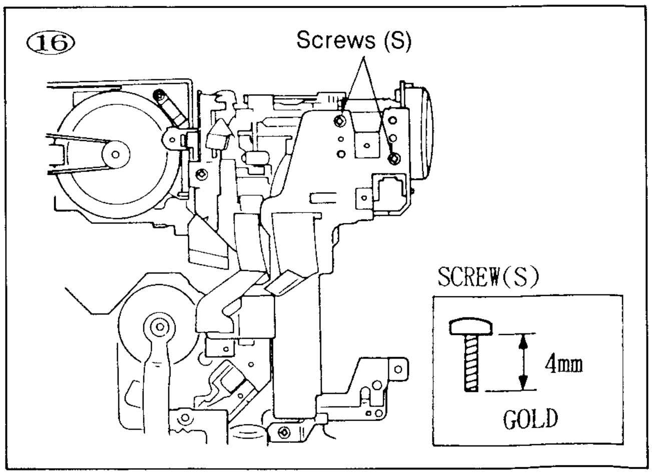
⑭


Connector (N)

⑮

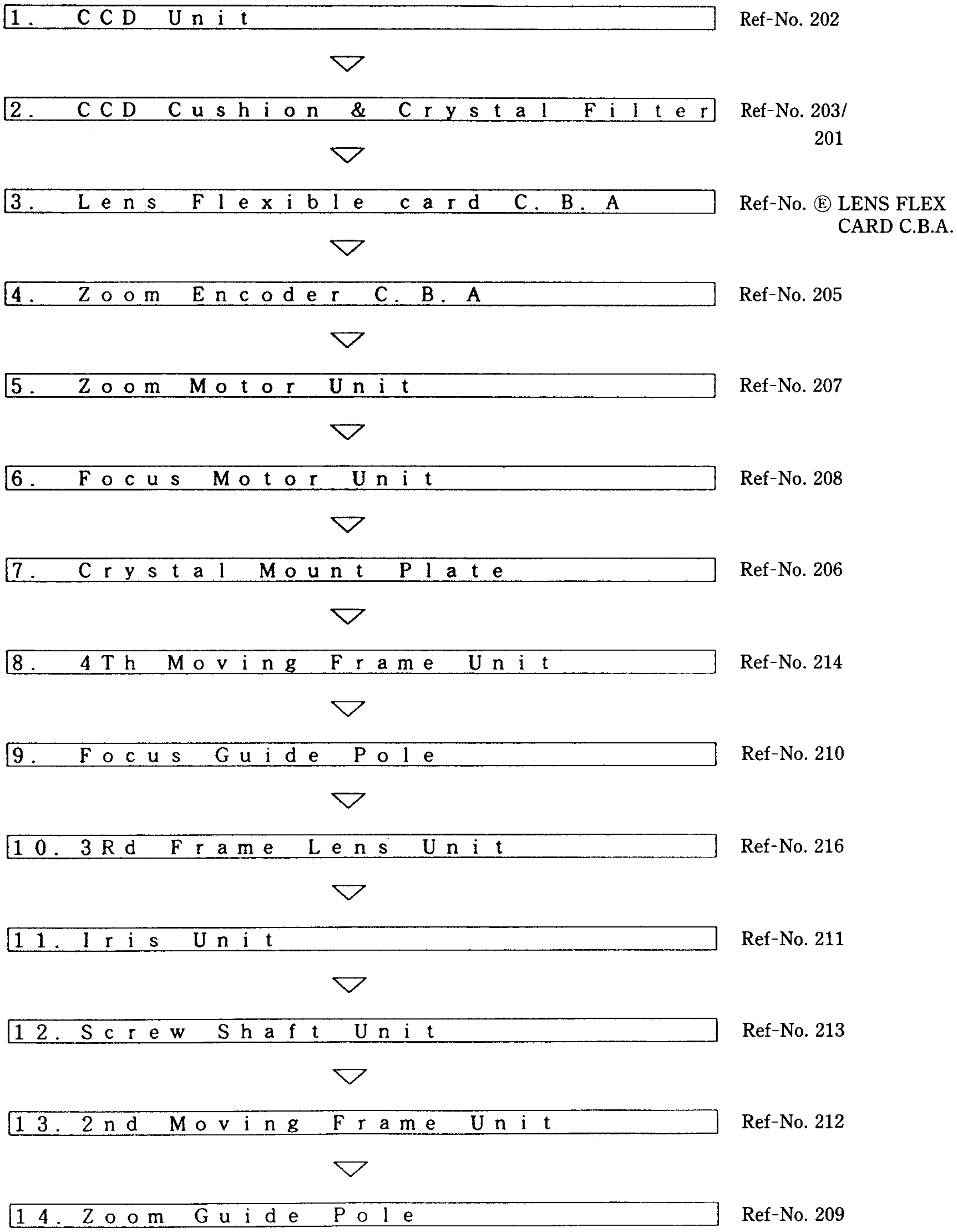

Connector(O)
Screw (R)
Connector(P)
SCREW(R)
3mm
GOLD

⑯


Screws (S)
SCREW(S)
4mm
GOLD

2-2. DISASSEMBLY PROCEDURES OF LENS UNIT

The following flowchart describes order or steps for removing the Lens Units and certain printed circuit boards in order to make access to the item needing service.
To reassemble the unit follow the steps in reverse order.


1. CCD Unit
Ref-No. 202
2. CCD Cushion & Crystal Filter
Ref-No. 203/201
3. Lens Flexible card C. B. A
Ref-No. Ⓔ LENS FLEX CARD C.B.A.
4. Zoom Encoder C. B. A
Ref-No. 205
5. Zoom Motor Unit
Ref-No. 207
6. Focus Motor Unit
Ref-No. 208
7. Crystal Mount Plate
Ref-No. 206
8. 4Th Moving Frame Unit
Ref-No. 214
9. Focus Guide Pole
Ref-No. 210
10. 3Rd Frame Lens Unit
Ref-No. 216
11. Iris Unit
Ref-No. 211
12. Screw Shaft Unit
Ref-No. 213
13. 2nd Moving Frame Unit
Ref-No. 212
14. Zoom Guide Pole
Ref-No. 209

Note: Each Ref-numbers are equivalant to number on Fig L2 and Parts-List.

Fig. L1

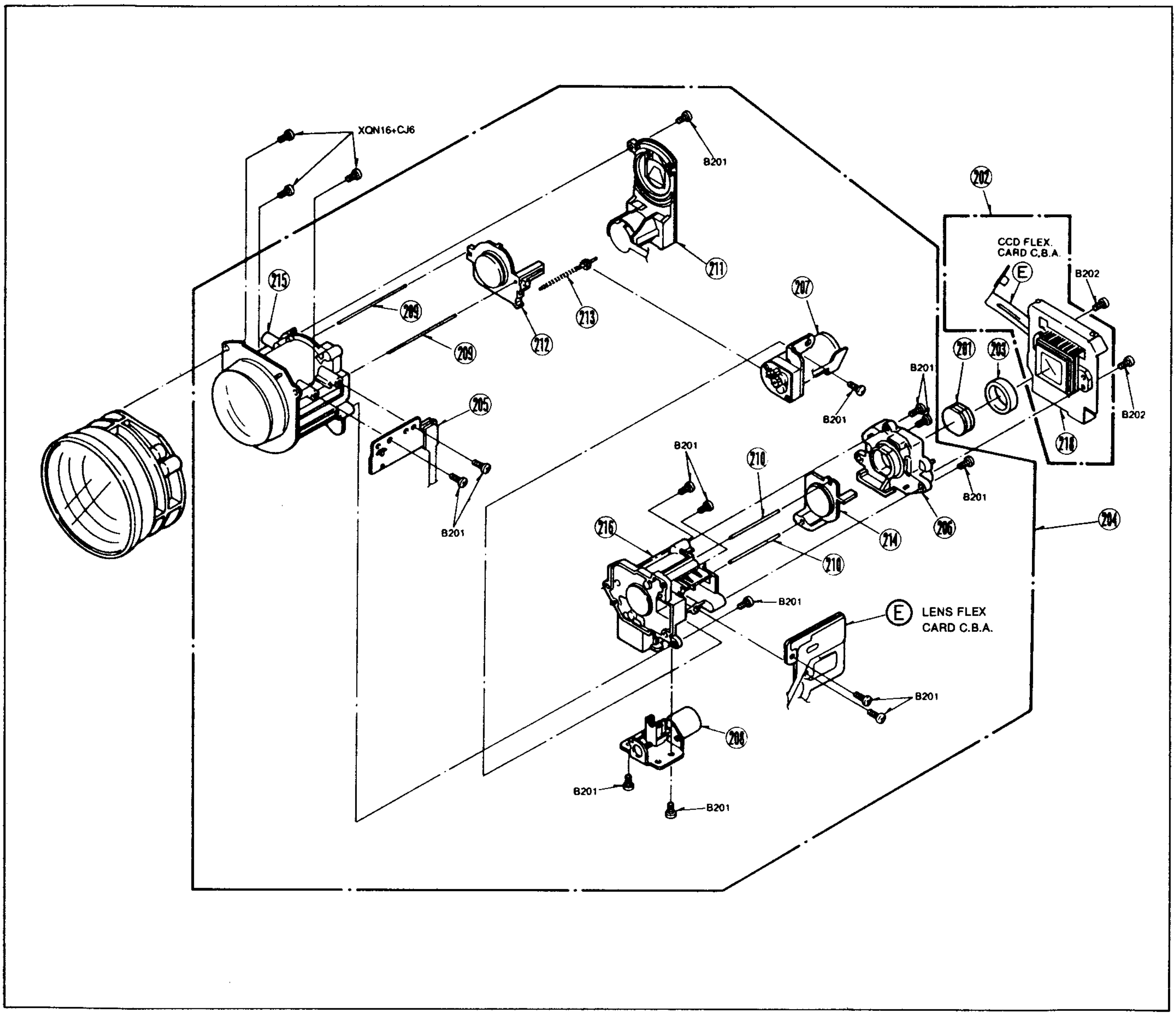
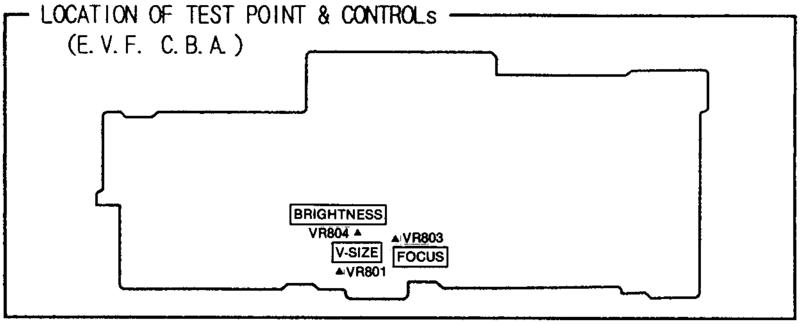

XQN16+CJ6
B201
202
CCD FLEX.
CARD C.B.A.
E
B202
215
211
207
209
212
213
209
201
203
B201
B201
B202
218
205
B201
210
B201
B201
216
214
206
204
210
B201
E
LENS FLEX
CARD C.B.A.
B201
208
B201
B201

Fig. L2

2-6. ELECTRICAL ADJUSTMENT (VARIABLE RESISTOR TYPEs)

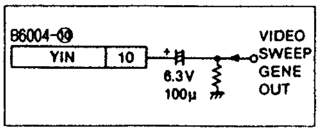
1. General Description:
This section shows electrical adjustments in which Variable Resistors (Volume) are used.
In this model, two video adjustments, one audio adjustment and all E.V.F. adjustments employ its adjustment.
Regarding the other adjustments which require the E.V.R., refer to Adjustment Service Manual.
(Order No. VMD9501M107).

2. The following Equipments are required :
   1:Plastic Tip Driver
   2:(Only for "Y/C" section)
      *. Blank Tape
      *. Alignment Tape(Order No:VFM8180HUPF)
      *. Oscilloscope
      *. Sweep Generator.
   3:(Only for "FM AUDIO" section)
      *. Frequency Counter
   4:(Only for E.V.F. section)
      *. Charts⇨ Ball-Chart/Registration-Chart/Gray Scale-Chart.
      *. Extension Cable ⇨ VFK0839 (30pin:MAIN C.B.A. ~ E.V.F. C.B.A.)

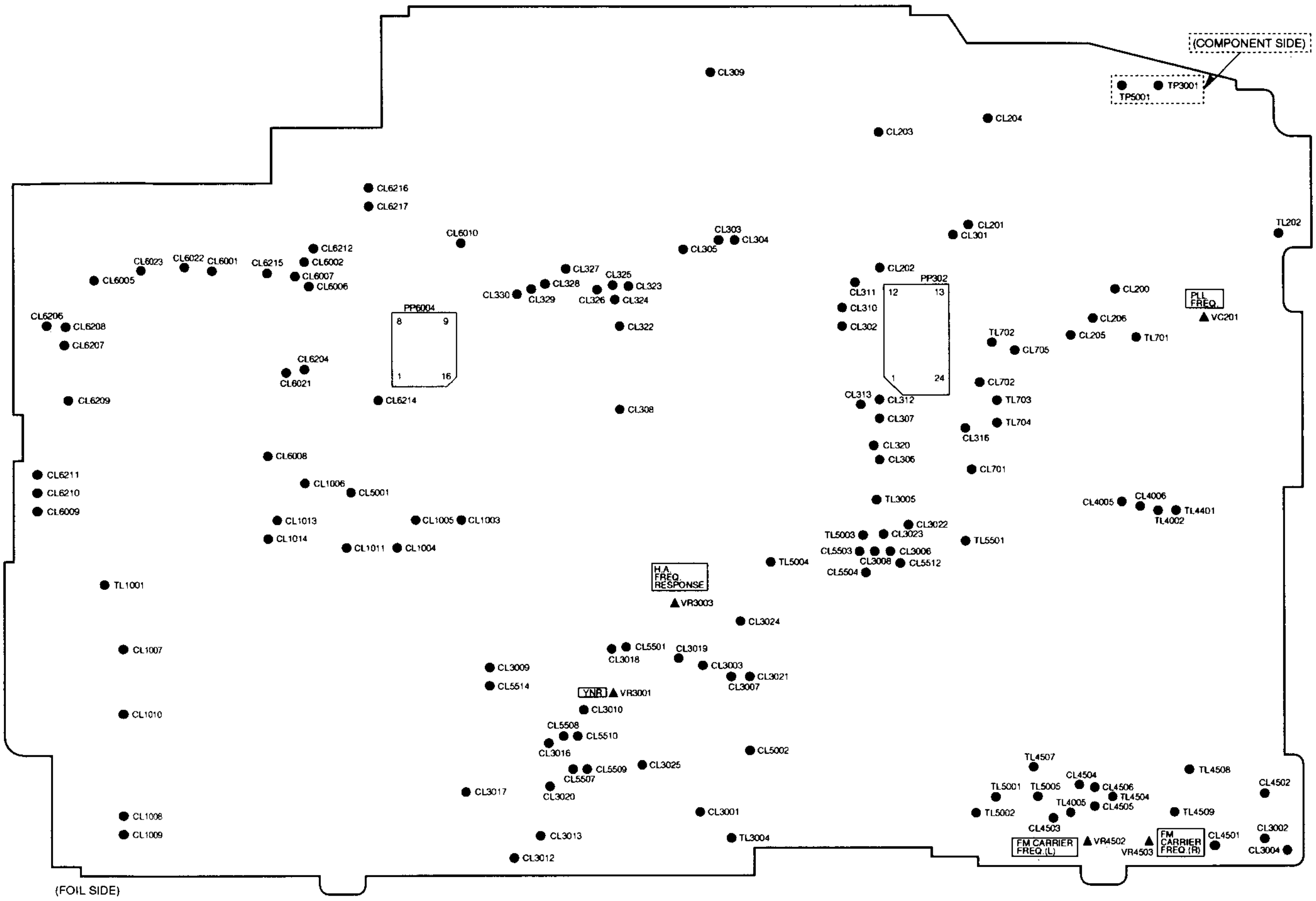

LOCATION OF TEST POINT & CONTROLs
(E.V.F. C.B.A.)

3. Before Adjustment(Preparation):
   1:Remove the Casing panels. (Refer to "DISASSEMBLY PROCEDURES")
   2:(Only for E.V.F. section)
      *. Connect the Viewfinder to unit with Extension Cable VFK0839(30Pin). (Refer to Fig. E3)
      (Note:The camera unit must be aligned completely, before E.V.F. adjustment.)

4. Adjustment Procedures

ITEM	CONDITION/PRESET	INPUT-SIGNAL/ Test Chart	TEST POINT	ADJUSTMENT METHODS / SPECIFICATIONS
(LUMINANCE & CHROMINANCE SECTION)				
1. YNR	*. Playback the alignment tape. *. Connect the oscilloscope.	———	TL3004	*. Adjust the VR3001. Spec:The signal is minimized. (Less than 50mV.) (Refer to Fig. E1)
2. LUMINANCE FREQUENCY RESPONCE	*. Connect the jumper: (PP6004⑦~PP6004⑪) *. Connect the Sweep Gen. (Refer to Fig. L) *. Record the signal and Playback it.	*. Sweep signal	VIDEO OUT	*. Adjust the VR3003. Spec : PP6004⑩ 2MHz:0.01MHz=1:1 (Refer to Fig. E2)  86004-⑩ YIN 10 6.3V 100µ VIDEO SWEEP GENE OUT Fig. L
(FM AUDIO SECTION)				
1. FM CARRIER FREQUENCY	*. Disconnect⇨ P4001. *. Unit⇨ REC mode. *Connect the Frequency Counter.	———	<L ch> :TL4507 <R ch> :TL4508	<L ch> *. Adjust the VR4502. Spec: TL4507=1.4M±10kHz <R ch> *. Adjust the VR4503. Spec: TL4508=1.8M±10kHz
(E. V. F. SECTION)				
1. CENTREING	*. Aim the camera at Registration chart.	Registration Chart	E.V.F. & TV Screen	*. Adjust the deflection-yoke and centering magnets. Spec:The picture comes to centre. (Refer to Fig. E4)
2. FOCUS	*. Aim the camera at Ball chart.	Ball Chart	E.V.F. Screen	*. Adjust the VR803. Spec:Best resolution. Note: After adjustment, confirm the direction of the "A" part. (Refer to Fig. E5)
3. VERTICAL SIZE	*. Aim the camera at Gray-Scale chart	Gray Scale Chart	E.V.F & TV Screen	*. Adjust the VR801. Spec: Best vertical size. Note: Picture does not roll. (Refer to Fig. E6.)
4. BRIGHTNESS	*. Aim the camera at Gray-Scale chart	Gray Scale Chart	E.V.F & TV Screen	*. Adjust the VR804. Spec: The brightness is same as monitor TV.

LOCATION OF TEST POINTS & CONTROLS
(MAIN C.B.A.)


(COMPONENT SIDE)
TP3001
TP5001
CL309
CL204
CL203
CL6216
CL6217
CL201
CL301
TL202
CL6010
CL303
CL304
CL305
CL6023
CL6022
CL6001
CL6215
CL6212
CL6002
CL6005
CL6007
CL6006
CL327
CL325
CL328
CL323
CL330
CL329
CL326
CL324
CL202
PP302
CL311
12
13
CL200
PLL FREQ.
VC201
PP6004
8
9
CL6206
CL6208
CL6207
CL322
CL310
CL302
CL206
TL702
CL205
TL701
CL705
CL6204
CL6021
1
16
1
24
CL702
CL6209
CL6214
CL308
CL313
CL312
TL703
CL307
TL704
CL316
CL320
CL306
CL6008
CL701
CL6211
CL1006
CL5001
CL6210
TL3005
CL4005
CL4006
CL6009
TL4401
TL4002
CL1013
CL1005
CL1003
CL3022
TL5003
CL3023
CL1014
TL5501
CL1011
CL1004
CL5503
CL3006
CL3008
CL5512
TL5004
CL5504
H.A. FREQ. RESPONSE
TL1001
VR3003
CL3024
CL5501
CL3019
CL1007
CL3018
CL3009
CL3003
CL3021
CL5514
CL3007
YNR
VR3001
CL3010
CL1010
CL5508
CL5510
CL3016
CL5002
TL4507
CL5509
CL3025
TL4508
CL4504
CL5507
TL5001
TL5005
CL4506
CL4502
CL3017
CL3020
TL4504
TL4005
CL4505
CL1008
CL3001
TL5002
TL4509
CL4503
CL3002
CL1009
CL3013
TL3004
FM CARRIER FREQ.(L)
VR4502
FM CARRIER FREQ.(R)
CL4501
VR4503
CL3004
CL3012
(FOIL SIDE)

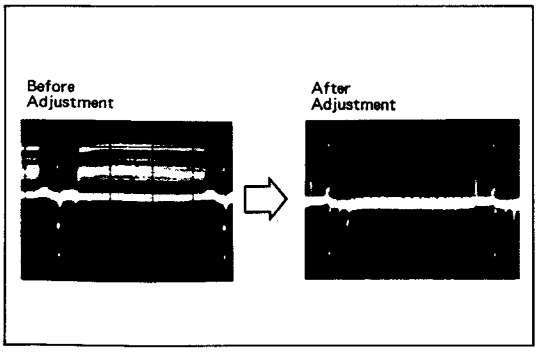

Before Adjustment
After Adjustment

Fig. E1

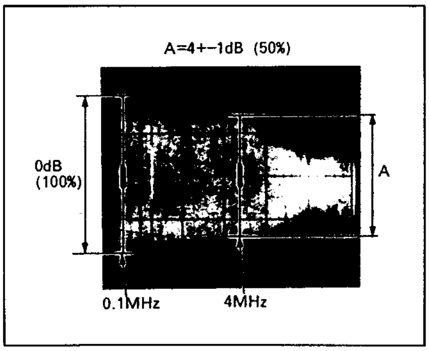


Fig. E2

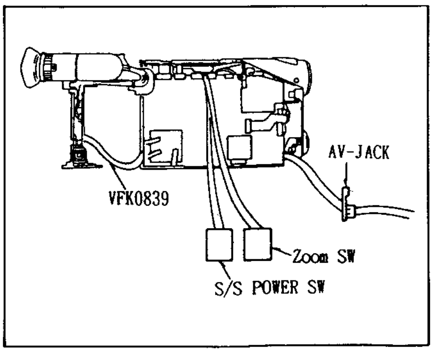

AV-JACK
VFK0839
Zoom SW
S/S POWER SW

Fig. E3

CENTREING ADJUSTMENT

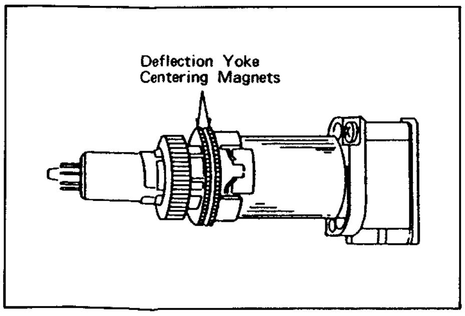

Deflection Yoke Centering Magnets

Fig. E4

FOCUS ADJUSTMENT

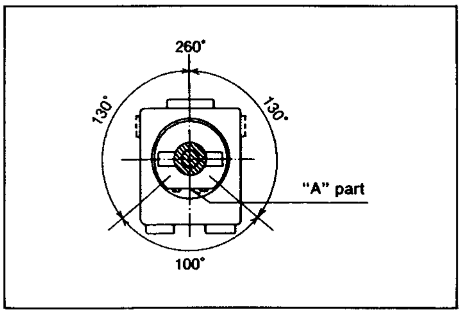

260°
130°
130°
"A" part
100°

Fig. E5

VERTICAL ADJUSTMENT

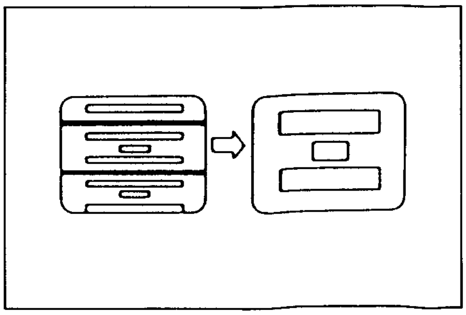


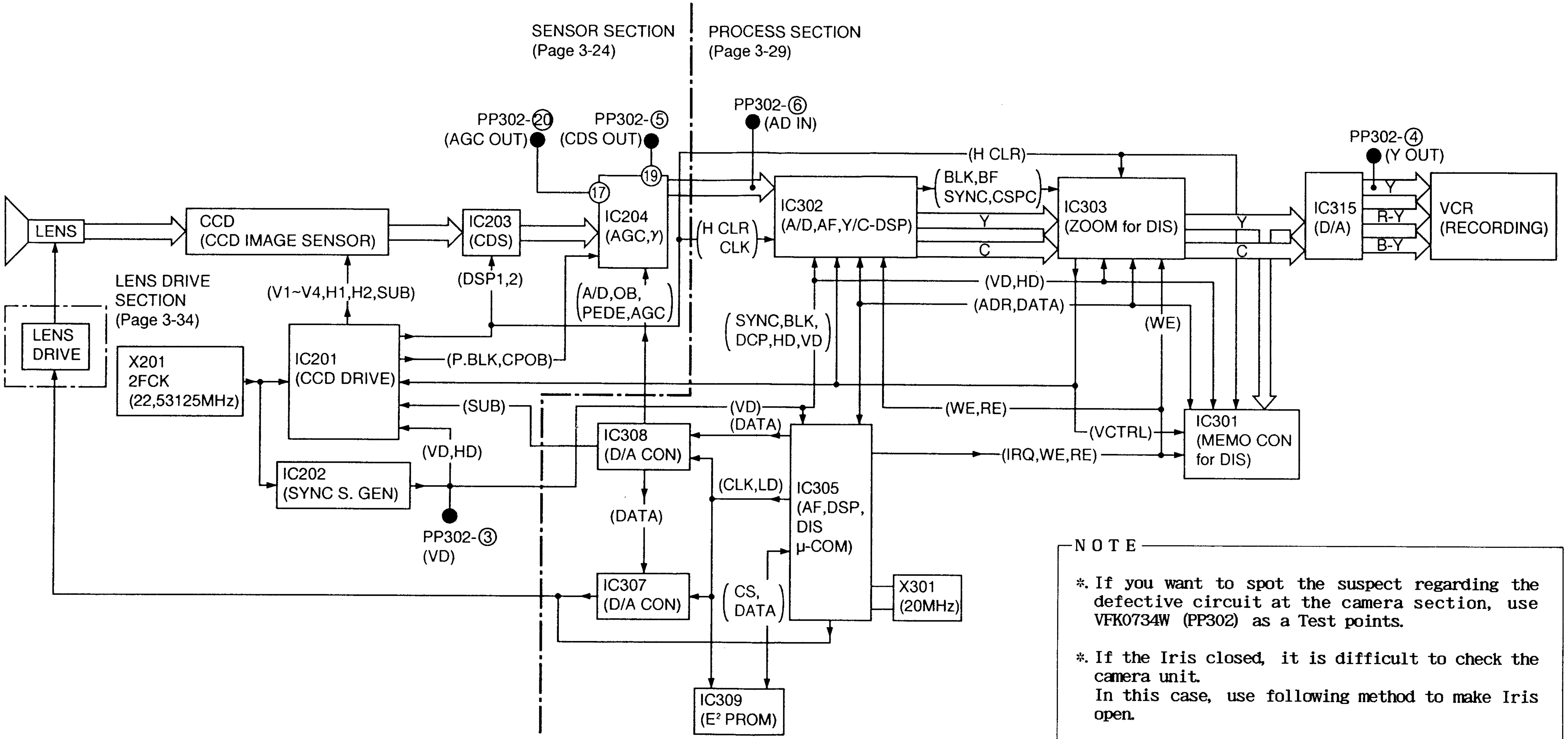
Fig. E6

Memo

SECTION 3
BLOCK DIAGRAMS & SCHEMATIC DIAGRAMS
3-1. ABBREVIATIONS

INITIAL/LOGO		ABBREVIATIONS
	3R3V	3.3V
A	A.TR	AUTO TRACKING
	ABSF	FOCUS ENCODER INPUT
	ADCLK	A/D CLOCK
	ADCNT	A/D CONTROL
	ADREC	AUDIO DELAIED REC
	ADUB	AUDDIO DUBBING
	AE	AUTO EXPOSE
	AECNT	AUTO EXPOSE CONTROL
	AEIRQ	AUTO EXPOSE INTERRUPT REQUEST
	AFADE	AUDIO FADE
	AGCCNT	AGC CONTROL
	AGS	ANTI GROUND SHOOTING
	ALCCNT	ALC CONTROL
	ALCMAIN	ALC DRIVE
	AMUT	AUDIO MUTE
	AORP	AUDIO OVER LAP PULSE
	APS	AUTO POWER SAVE
	ARTV	ARTIFICAL VERTICAL SYNC
	AWTB	AUTO WHITE BALANCE B-Y
	AWTR	AUTO WHITE BALANCE R-Y
B	B-Y KB	B-Y CARRIER BALANCE
	BACK	BACK-UP
	BEND	BURST FLUG PULSE
	BFA	BURST FLUG FOR ENCODER
	BL	BACK LIGHT
	BLDIN	BACK LIGHT DRIVE INPUT
	BLDOUT	BACK LIGHT DRIVE OUTPUT
	BLK	BLANKING PULSE
	BM	BALANCED MODULATOR
	BUF	BUFFER
C	CAPVM	CAPSTAN MOTOR CURRENT
	CCW	COUTER CLOCKWISE
	CDS	CORRELATE DOUBLE SAMPLING SIGNAL
	CFM 1~4	CHROMINANCE FIELD MEMORY
	CGC	CHROMINANCE GAIN
	CH1	Channel 1(Odd Field)
	CHR MIX	CHARACTER MIX
	CK or CLK	CLOCK
	CLK2	CLOCK 2(824XFH: 12.875MHz)
	CFEM	CHORMINACE MEMORY SIGNAL
	CMO	CHROMA MEMORY OUTPUT
	CO0~7	CHORMO OUTPUT(DIGITAL)
	CP	CLAMP PULSE
	CPOB	OB CLAMP PULSE
	CS	CHIP SELECT
	CSEL1~2	CLOCK PHASE SELECET
	CW	CLOCWISE
	CYLVM	CYLINDER MOTOR CURRENT
D	D MODE0~2	DIGITAL MODE SWITCH SIGNAL
	DAC	DIGITA/ANALOG CONVERTER
	D0~D8(D9)	VIDEO OUT(DIGITAL 8 or 9 BIT)
	DCLR	DIGITAL CLEAR
	DICLK	DIGITAL CLOCK
	DISCS	DIS CHIP SELECT
	DL	DELAY LINE
	DRK	DARK
	DS 1~2	DOUBLE SAMPLING PULSE
	DSP	DIGITAL SIGNAL PROCESS
	DZ	DIGITAL ZOOM
	DZ/OZ	DIGITAL ZOOM/OPTICAL ZOOM
E	ECM	ELECTRIC CONDENCER MIC
	EEPROM	ELECTRIC ERASABLE PROGRAMABLE-READ
	(E^2 PROM)	ONLY MEMORY
	ENV	ENVELOPE DITECT
	EQ	EQUALIZER
	EZOOM	ELECTRIC ZOOM
F	FAR	FAR(FOCUS)
	FCK	CLOCK
	FENC	FOCUS ENCODER
	FH2B	FH/2(15.625KHz÷2 =7.8125KHz)
	FM CS	CHIP SELECT FOR FM-AUDIO
	FM MUTE	FM AUDIO MUTE
	FM0~7(8)	FIELD MEMORY INPUT 8BIT(or 9BIT)
	FMD REC	FM AUDIO DELAYED REC
	FMOEM	FIELD MEMORY ENABLE
	FNO	F VALUE
G	GCNT	GAIN CONTROL
H	H1~H2	H.CCD DRIVE PULSE
	H.A SW	HEAD AMP SW
	HBRST	HIGH BRIGHT SET
	HCLR	HIGH CLEAR
	HEX	HEXADECIMAL
	HLT	HIGHT BRIGHT SIGNAL
I	INTER	INTERVAL RECORDING
	IOU	R-Y ANALOGUE SIGNAL OUTPUT
	IOV	B-Y ANALOGUE SIGNAL OUTPUT
	IRQ	INTERRUPT REQUEST
	IRIS/SH	IRIS/SHUTTET CONTROL
K	KANDO	DIGITAL GAIN UP
L	LD	LOAD PULSE
	LEDCNT	LED CONTROL
	LI-BATT	LITHIUM BATTERY
	LSB	LEAST SIGNFICANT BIT
	LVL	VL FILTE SWITCHING
M	MD	MODILATOR
	MFF	MANUAL FOCUS FAR
	MFN	MANUAL FOCUS NEAR
	MSB	MOST SIGNFICANT BIT
	MIX N.R.D	NON REC DATA MIX
N	N/F	NEAR/FAR(FOCUS)
	N/P	NTSC/PAL
	NC	NO CONNECTION
	NC1~3	NPN TRANSISTOR C-SIDE
	NDE	NON LINER DE-EMPHAIS
	NEAR	NEAR(FOCUS)
	NLE	NON LINER EMPHASIS
	NRD	NON REC DATA
	NRDBLK	NON REC DATA BLNKING
	NRE	READ ENABLE INPUT(LOW ACTIVE)
	NWE	WRITE ENABLE(LOW ACTIVE)
O	OBCNT	OPTICAL BLACK CONTROL
	OE	OUTPUT ENABLE
	OP	OPERATIONAL AMP OUTPUT
	OSD	ON SCREEN DISPLAY
P	PB1~3	PNP TRANSITOR B-SIDE
	PBLK	PRE-BLANKING
	PCBM(B-Y)	B-Y CARRIER BALANCE
	PCBM(R-Y)	R-Y CARRIER BALANCE
	PEDECNT	PEDESTAL CONTROL
	PORIN or POR	POWER ON RESET
	PREAP	PRE-AMP
	PREBLK	PRE-BLANKING
	PT	PROTECT FOR V VOLTAGE
	PWM	PULSE WIDTH MODULATOR
R	R/B	READT/BUSY
	R-Y KB	R-Y CARRIER BALANCE
	RAD	READ ADDRESS DATA
	RAE	READ ADDRESS ENABLE
	RE	READ ENABLE
	RE	ROTARY ERASE HEAD
	RERASE	ROTARY ERASE HEAD
	RST	RESET
	RSTPWD	RESET POWER DOWN INPUT
	RSTR	RESET READ
	RSTW	RESET WRITE
S	S/S	START/STOP
	SBO	SERIAL OUTPUT
	SBD	SERIAL DATA
	SCLK	SERIAL CLOCK
	SCR	SERCH
	SDET	S-VHS DETECT
	SH/IRIS	SHUTTER/IRIS CONTROL
	STAB	S-VHS TAB SWITCH
	STRB	STRBO MODE
	SUB CNT	SUB CONTROL
T	TBC	TIME BASE CORRECTOR
	TBC.C OUT	TIME BASE CORRECTOR CHROMA OUT
	TBC.V OUT	TIME BASE CORRECTOR VIDEO OUT
	TL	TORQUE LIMIT
	TRFIX	TRACKING FIX
	TRIWAVE	TRIANGLE WAVE
	TRP	TRAP
U	U/V SECT	R-Y/B-Y SELECT SIGNAL
	UVSEL	R-Y/B-Y SELECT SIGNAL
V	V1~V4	V.CCD DRIVE PULSE
	VB	VH FILTER SWITCHING
	VCO	VOLTAGE CONTROL OSCILLTOR
	VCTRL	VOLTAGE CHARGE CONTROL
	VD	VERTICAL DRIVE PULSE
	VDREC	VIDEO DELAYED REC
	VIN	VIDEO IN(ANALOGUE)
	VITC	VETICAL INTERVAL TIME CODE
	VMD1~VMD3	VELOCITY MODE DATA(SHUTTER)
	VMVH	VH FILTER SWITCHING
	VORP	VIDEO OVERLAP
	VRB	VOLTAGE REFERENCE BOTTOM(1.3V)
	VREF1R3V	REFERENCE VOLTAGE 1.3V
	VREF3R3V	REFERENCE VOLTAGE 3.3V
	VREFH	REFERENCE VOLTAGE HIGH SIDE
	VREFL	REFERENCE VOLTAGE LOW SIDE
	VRI	REFERENCE VOLTAGE INPUT
	VRO	REFERENCE VOLTAGE OUTPUT
	VRT	VOLTAGE REFERENCE TOP(3.3V)
	VSS	VERTICAL SYNC SIGNAL
W	WAD OR WAE	WRITE ADDRESS ENABLE
	WE	WRITE ENABLE
	WHD	WIDE HORIZONTAL DRIVE PULSE
Y	Y0~Y7(Y8)	8BIT(9BIT)LUMINANCE DIGITAL SIGNAL
	YNCST	NOISE CANCELER
	YNR	NOISE REDUCTION
Z	Z ENC	ZOOM ENCODER
	Z-MIC	ZOOM MIC
	ZENC1/ZENC4	ZOOM ENCEODER OUTPUT
	ZMTER	ZOOM MOTOR TELE SIDE
	ZMT(+)/(-)	ZOOM MOTOR (+)/(-)
	ZMW	ZOOM MOTOR WIDE SIDE

3-2. OVERALL BLOCK DIAGRAM

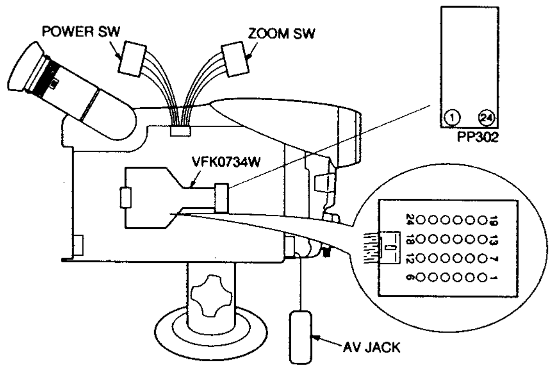

SENSOR SECTION
(Page 3-24)
PROCESS SECTION
(Page 3-29)
PP302-⑳
(AGC OUT)
PP302-⑤
(CDS OUT)
PP302-⑥
(AD IN)
PP302-④
(Y OUT)
LENS
CCD
(CCD IMAGE SENSOR)
IC203
(CDS)
⑰
⑲
IC204
(AGC,γ)
(H CLR)
(H CLR
CLK)
IC302
(A/D,AF,Y/C-DSP)
(BLK,BF
SYNC,CSPC)
Y
C
IC303
(ZOOM for DIS)
Y
C
IC315
(D/A)
Y
R-Y
B-Y
VCR
(RECORDING)
LENS DRIVE
SECTION
(Page 3-34)
LENS
DRIVE
(V1~V4,H1,H2,SUB)
(DSP1,2)
(A/D,OB,
PEDE,AGC)
(SYNC,BLK,
DCP,HD,VD)
(VD,HD)
(ADR,DATA)
(WE)
X201
2FCK
(22,53125MHz)
IC201
(CCD DRIVE)
(P.BLK,CPOB)
(SUB)
(VD)
(DATA)
(WE,RE)
(VCTRL)
IC301
(MEMO CON
for DIS)
IC308
(D/A CON)
(VD,HD)
IC202
(SYNC S. GEN)
PP302-③
(VD)
(CLK,LD)
IC305
(AF,DSP,
DIS
μ-COM)
(IRQ,WE,RE)
(DATA)
IC307
(D/A CON)
(CS,
DATA)
X301
(20MHz)
IC309
(E² PROM)

NOTE

※. If you want to spot the suspect regarding the defective circuit at the camera section, use VFK0734W (PP302) as a Test points.

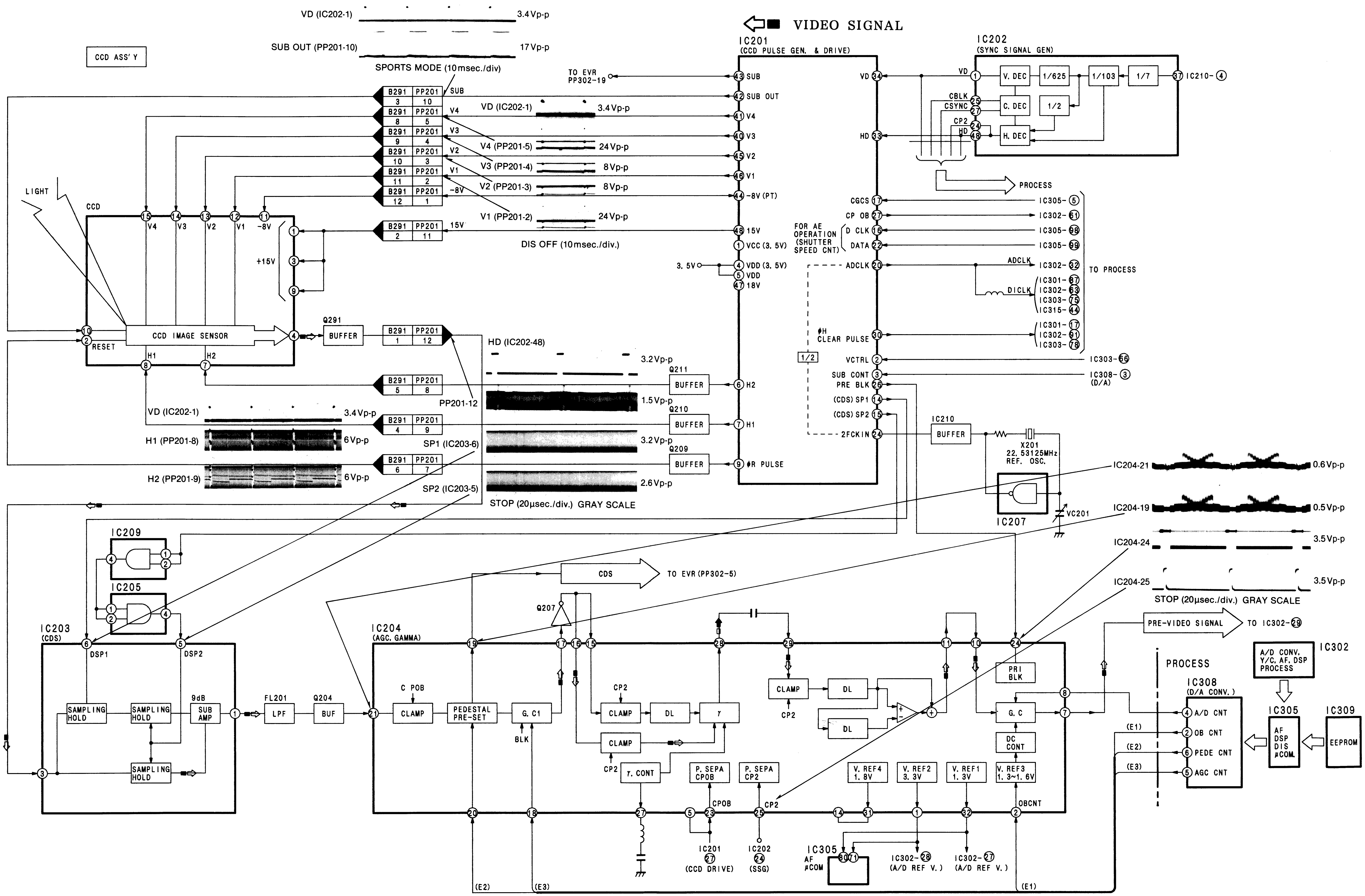
※. If the Iris closed, it is difficult to check the camera unit.
In this case, use following method to make Iris open.

@ Connect VFK0734W 11pin and VFK0734W 5pin
(PP302) (PP302)

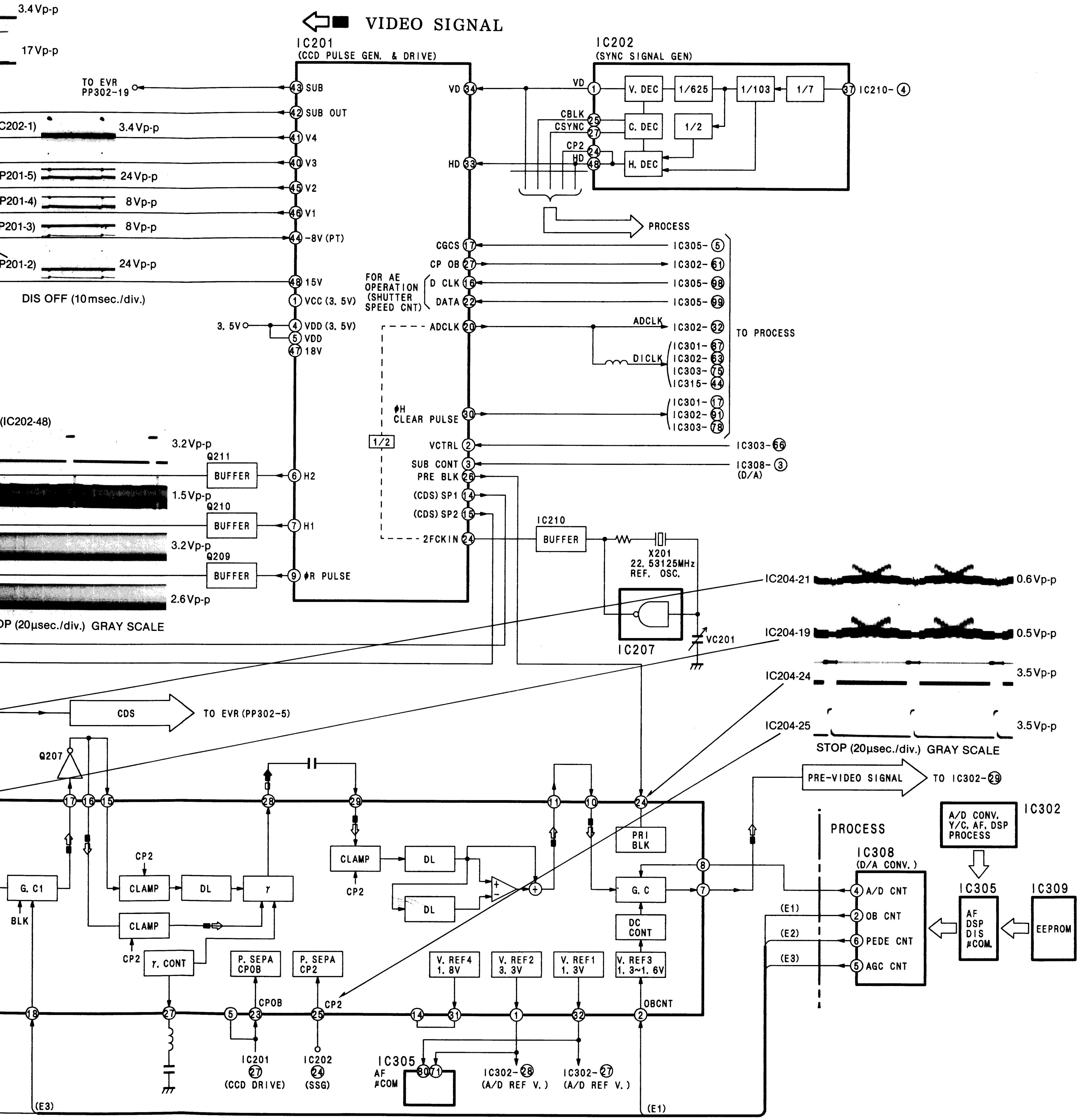

POWER SW
ZOOM SW
VFK0734W
① ㉔
PP302
AV JACK

Back Page:
ABBREVIATIONS Section

3-3. SENSOR BLOCK DIAGRAM

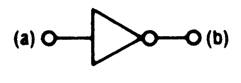


VD (IC202-1) 3.4Vp-p
SUB OUT (PP201-10) 17Vp-p
SPORTS MODE (10msec./div)
CCD ASS'Y
VIDEO SIGNAL
IC201 (CCD PULSE GEN. & DRIVE)
IC202 (SYNC SIGNAL GEN)
TO EVR PP302-19
SUB
SUB OUT
V4
V3
V2
V1
-8V (PT)
15V
VCC (3. 5V)
3. 5V
VDD (3. 5V)
VDD
18V
B291 PP201
VD (IC202-1) 3.4Vp-p
V4 (PP201-5) 24Vp-p
V3 (PP201-4) 8Vp-p
V2 (PP201-3) 8Vp-p
V1 (PP201-2) 24Vp-p
DIS OFF (10msec./div.)
LIGHT
CCD
+15V
CCD IMAGE SENSOR
RESET
H1
H2
Q291
BUFFER
HD (IC202-48)
3.2Vp-p
1.5Vp-p
3.2Vp-p
2.6Vp-p
PP201-12
VD (IC202-1) 3.4Vp-p
H1 (PP201-8) 6Vp-p
H2 (PP201-9) 6Vp-p
SP1 (IC203-6)
SP2 (IC203-5)
STOP (20μsec./div.) GRAY SCALE
Q211 BUFFER
Q210 BUFFER
Q209 BUFFER
ϕR PULSE
VD
HD
V. DEC
1/625
1/103
1/7
IC210-④
CBLK
CSYNC
C. DEC
1/2
CP2
H. DEC
PROCESS
CGCS IC305-⑤
CP OB IC302-61
FOR AE OPERATION (SHUTTER SPEED CNT)
D CLK IC305-98
DATA IC305-99
ADCLK IC302-32
DICLK IC301-87 IC302-63 IC303-75 IC315-44
TO PROCESS
ϕH CLEAR PULSE IC301-17 IC302-91 IC303-78
1/2
VCTRL IC303-66
SUB CONT IC308-③ (D/A)
PRE BLK
(CDS) SP1
(CDS) SP2
2FCKIN
IC210 BUFFER
X201 22. 53125MHz REF. OSC.
IC207
VC201
IC204-21 0.6Vp-p
IC204-19 0.5Vp-p
IC204-24 3.5Vp-p
IC204-25 3.5Vp-p
STOP (20μsec./div.) GRAY SCALE
IC209
IC205
CDS
TO EVR (PP302-5)
Q207
IC203 (CDS)
DSP1
DSP2
SAMPLING HOLD
9dB SUB AMP
FL201 LPF
Q204 BUF
IC204 (AGC, GAMMA)
C POB
CLAMP
PEDESTAL PRE-SET
G. C1
BLK
CP2
DL
γ
γ. CONT
P. SEPA CPOB
P. SEPA CP2
CPOB
CP2
PRI BLK
G. C
DC CONT
V. REF4 1. 8V
V. REF2 3. 3V
V. REF1 1. 3V
V. REF3 1. 3~1. 6V
OBCNT
PRE-VIDEO SIGNAL
TO IC302-29
IC201 27 (CCD DRIVE)
IC202 24 (SSG)
IC305 AF μCOM
IC302-28 (A/D REF V.)
IC302-27 (A/D REF V.)
(E1)
(E2)
(E3)
PROCESS
IC308 (D/A CONV.)
A/D CNT
OB CNT
PEDE CNT
AGC CNT
IC302 A/D CONV. Y/C, AF, DSP PROCESS
IC305 AF DSP DIS μCOM
IC309 EEPROM


3.4Vp-p
17Vp-p
VIDEO SIGNAL
IC201
(CCD PULSE GEN. & DRIVE)
IC202
(SYNC SIGNAL GEN)
TO EVR PP302-19
SUB
SUB OUT
V4
V3
V2
V1
-8V (PT)
15V
VCC (3. 5V)
VDD (3. 5V)
VDD
18V
3.5V
C202-1)
3.4Vp-p
P201-5)
24Vp-p
P201-4)
8Vp-p
P201-3)
8Vp-p
P201-2)
24Vp-p
DIS OFF (10msec./div.)
VD
HD
V. DEC
1/625
1/103
1/7
IC210-④
CBLK
CSYNC
C. DEC
1/2
CP2
H. DEC
PROCESS
CGCS
CP OB
FOR AE OPERATION (SHUTTER SPEED CNT)
D CLK
DATA
ADCLK
DICLK
IC305-⑤
IC302-61
IC305-98
IC305-99
IC302-32
IC301-87
IC302-63
IC303-75
IC315-44
TO PROCESS
ϕH CLEAR PULSE
IC301-17
IC302-91
IC303-78
1/2
VCTRL
SUB CONT
PRE BLK
(CDS) SP1
(CDS) SP2
2FCKIN
IC303-66
IC308-③ (D/A)
IC210
BUFFER
X201 22. 53125MHz REF. OSC.
IC207
VC201
(IC202-48)
3.2Vp-p
Q211
BUFFER
H2
1.5Vp-p
Q210
H1
3.2Vp-p
Q209
ϕR PULSE
2.6Vp-p
P (20μsec./div.) GRAY SCALE
IC204-21
0.6Vp-p
IC204-19
0.5Vp-p
IC204-24
3.5Vp-p
IC204-25
3.5Vp-p
STOP (20μsec./div.) GRAY SCALE
CDS
TO EVR (PP302-5)
Q207
PRE-VIDEO SIGNAL
TO IC302-29
IC302
A/D CONV. Y/C. AF. DSP PROCESS
PROCESS
IC308 (D/A CONV.)
A/D CNT
OB CNT
PEDE CNT
AGC CNT
(E1)
(E2)
(E3)
IC305
AF DSP DIS μCOM.
IC309
EEPROM
G. C1
BLK
CLAMP
DL
γ
CP2
γ. CONT
PRI BLK
G. C
DC CONT
P. SEPA CPOB
P. SEPA CP2
V. REF4 1. 8V
V. REF2 3. 3V
V. REF1 1. 3V
V. REF3 1. 3~1. 6V
CPOB
OBCNT
IC201 27 (CCD DRIVE)
IC202 24 (SSG)
IC305 AF μCOM
IC302-28 (A/D REF V.)
IC302-27 (A/D REF V.)

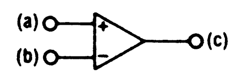
SYMBOL	TRUTH VALUE TABLE

INVERTER



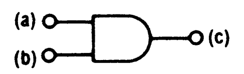
IN	(a)	H	L
OUT	(b)	L	H

COMPARTOR



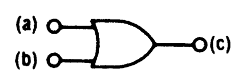
IN	(a) (b)	(a)>(b)	(a)<(b)
OUT	(c)	H	L

AND CIRCUIT



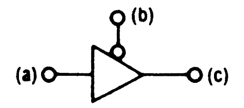
IN	(a)	L	L	H	H
	(b)	L	H	L	H
OUT	(c)	L	L	L	H

OR CIRCUIT



IN	(a)	L	L	H	H
	(b)	L	H	L	H
OUT	(c)	L	H	H	H

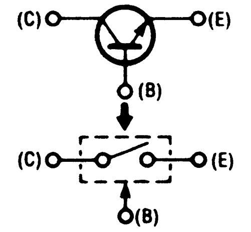
THREE STATES BUFFER



IN	(a)	H	L	H or L
	(b)	L	L	H
OUT	(c)	H	L	※

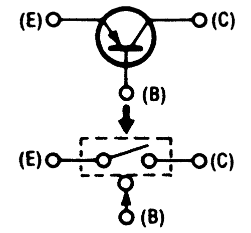
※ High Impedance

TR. SW (NPN TYPE)



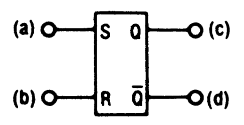
BASE	H	L
TR. SW	ON	OFF

TR. SW (PNP TYPE)



BASE	H	L
TR. SW	OFF	ON

R-S TYPE FLIP-FLOP

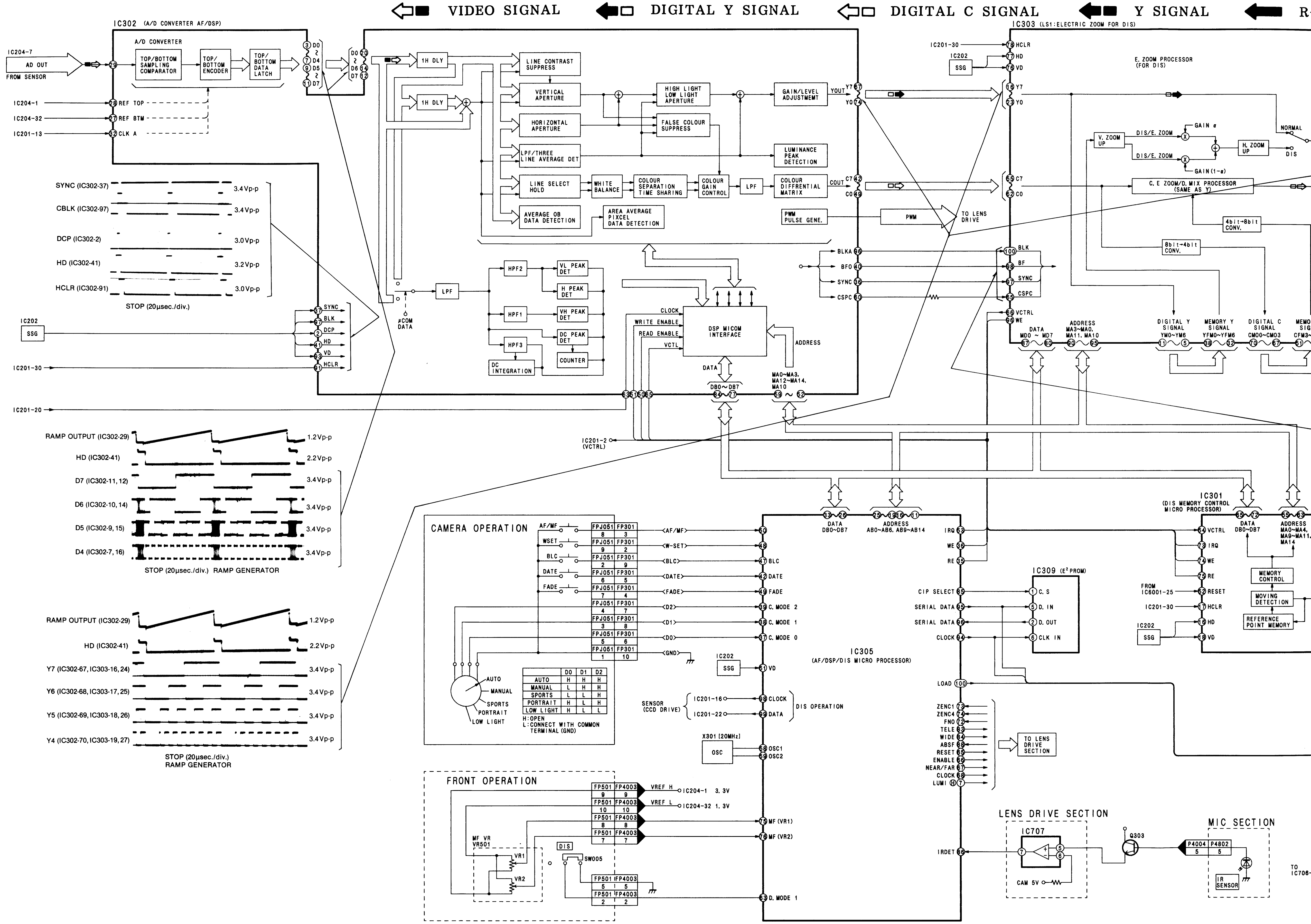


IN	(a)	L	L	⎍
	(b)	L	⎍	L
OUT	(c)	※	L	H
	(d)	◆	H	L

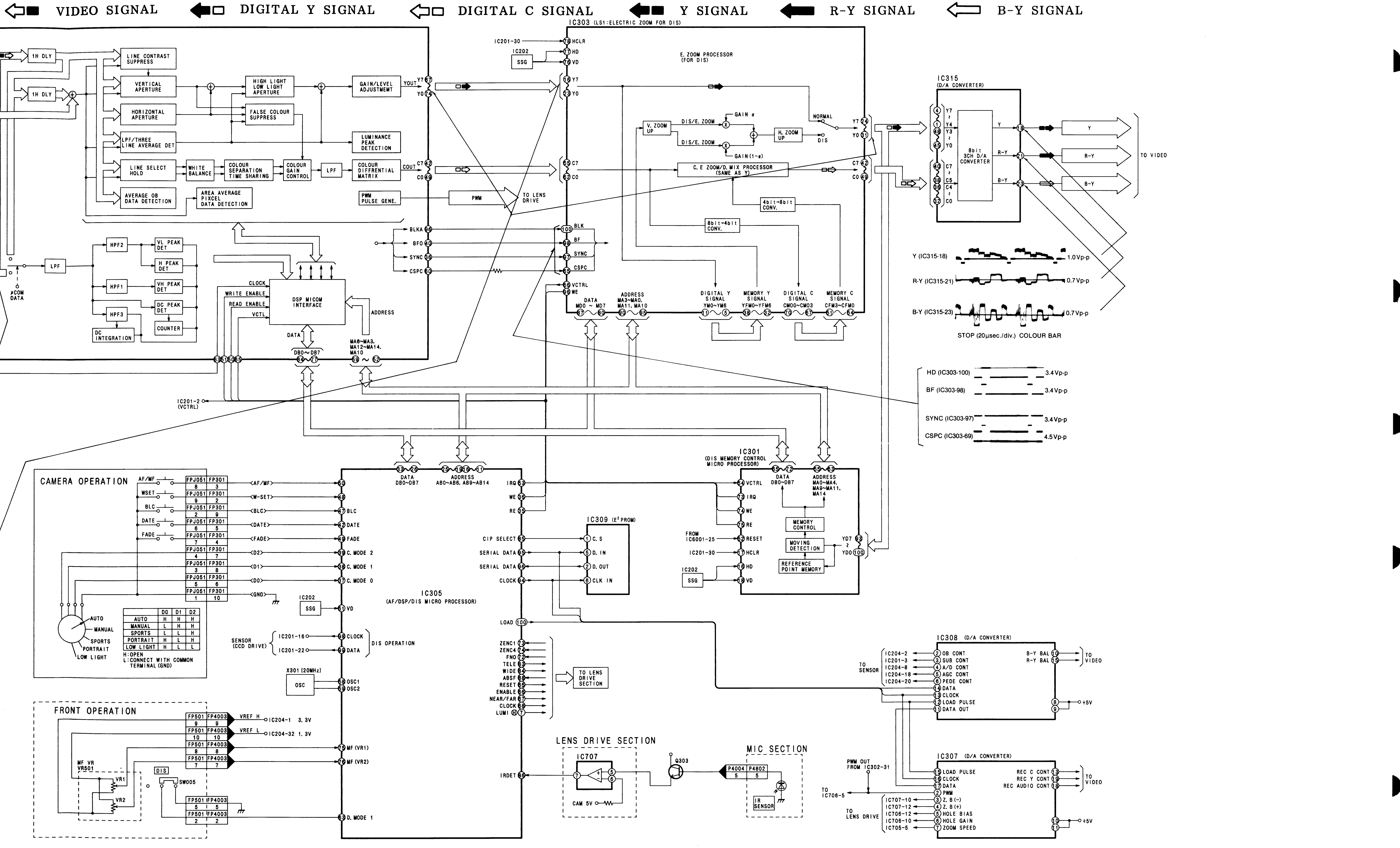
※ Initial condition is maintained.
◆ Initial condition is reversed.

Next Page:
PROCESS Section

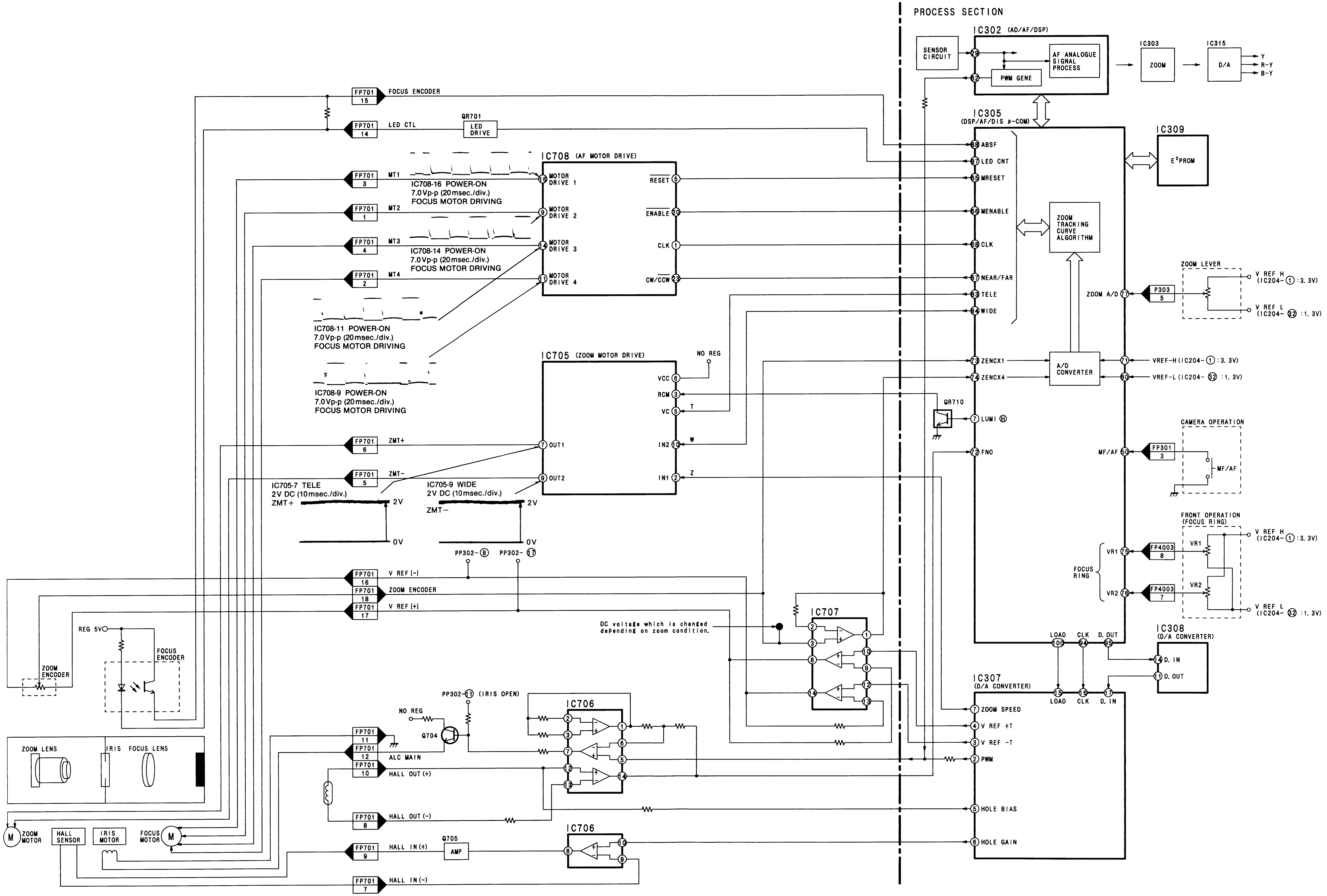
3-4. PROCESS BLOCK DIAGRAM


VIDEO SIGNAL
DIGITAL Y SIGNAL
DIGITAL C SIGNAL
Y SIGNAL
IC302 (A/D CONVERTER AF/DSP)
A/D CONVERTER
IC204-7
AD OUT
FROM SENSOR
TOP/BOTTOM SAMPLING COMPARATOR
TOP/BOTTOM ENCODER
TOP/BOTTOM DATA LATCH
D0 ~ D4 D5 ~ D7
IC204-1
REF TOP
IC204-32
REF BTM
IC201-13
CLK A
1H DLY
1H DLY
LINE CONTRAST SUPPRESS
VERTICAL APERTURE
HORIZONTAL APERTURE
LPF/THREE LINE AVERAGE DET
LINE SELECT HOLD
AVERAGE OB DATA DETECTION
HIGH LIGHT LOW LIGHT APERTURE
FALSE COLOUR SUPPRESS
WHITE BALANCE
COLOUR SEPARATION TIME SHARING
COLOUR GAIN CONTROL
LPF
AREA AVERAGE PIXCEL DATA DETECTION
GAIN/LEVEL ADJUSTMEMT
YOUT
Y7
Y0
LUMINANCE PEAK DETECTION
COLOUR DIFFRENTIAL MATRIX
COUT
C7
C0
PWM PULSE GENE.
PWM
TO LENS DRIVE
BLKA
BFO
SYNC
CSPC
SYNC (IC302-37) 3.4Vp-p
CBLK (IC302-97) 3.4Vp-p
DCP (IC302-2) 3.0Vp-p
HD (IC302-41) 3.2Vp-p
HCLR (IC302-91) 3.0Vp-p
STOP (20µsec./div.)
IC202
SSG
SYNC
BLK
DCP
HD
VD
HCLR
IC201-30
#COM DATA
LPF
HPF2
HPF1
HPF3
VL PEAK DET
H PEAK DET
VH PEAK DET
DC PEAK DET
COUNTER
DC INTEGRATION
CLOCK
WRITE ENABLE
READ ENABLE
VCTL
DSP MICOM INTERFACE
ADDRESS
DATA
DB0~DB7
MA0~MA3, MA12~MA14, MA10
IC201-20
IC201-2 (VCTRL)
RAMP OUTPUT (IC302-29) 1.2Vp-p
HD (IC302-41) 2.2Vp-p
D7 (IC302-11, 12) 3.4Vp-p
D6 (IC302-10, 14) 3.4Vp-p
D5 (IC302-9, 15) 3.4Vp-p
D4 (IC302-7, 16) 3.4Vp-p
STOP (20µsec./div.) RAMP GENERATOR
RAMP OUTPUT (IC302-29) 1.2Vp-p
HD (IC302-41) 2.2Vp-p
Y7 (IC302-67, IC303-16, 24) 3.4Vp-p
Y6 (IC302-68, IC303-17, 25) 3.4Vp-p
Y5 (IC302-69, IC303-18, 26) 3.4Vp-p
Y4 (IC302-70, IC303-19, 27) 3.4Vp-p
STOP (20µsec./div.) RAMP GENERATOR
IC303 (LS1:ELECTRIC ZOOM FOR DIS)
IC201-30
IC202
SSG
HCLR
HD
VD
Y7
Y0
C7
C0
E. ZOOM PROCESSOR (FOR DIS)
V. ZOOM UP
DIS/E. ZOOM
GAIN α
GAIN (1-α)
H. ZOOM UP
NORMAL
DIS
C. E ZOOM/D. MIX PROCESSOR (SAME AS Y)
4bit-8bit CONV.
8bit-4bit CONV.
BLK
BF
SYNC
CSPC
VCTRL
WE
DATA MD0 ~ MD7
ADDRESS MA3~MA0, MA11, MA10
DIGITAL Y SIGNAL YM0~YM6
MEMORY Y SIGNAL YFM0~YFM6
DIGITAL C SIGNAL CM00~CM03
CAMERA OPERATION
AF/MF
WSET
BLC
DATE
FADE
AUTO
MANUAL
SPORTS
PORTRAIT
LOW LIGHT
H:OPEN
L:CONNECT WITH COMMON TERMINAL (GND)
FPJ051 FP301
<AF/MF>
<W-SET>
<BLC>
<DATE>
<FADE>
<D2>
<D1>
<D0>
<GND>
IC305 (AF/DSP/DIS MICRO PROCESSOR)
DATA DB0~DB7
ADDRESS AB0~AB6, AB9~AB14
BLC
DATE
FADE
C. MODE 2
C. MODE 1
C. MODE 0
VD
IC202
SSG
SENSOR (CCD DRIVE)
IC201-16
IC201-22
CLOCK
DATA
DIS OPERATION
X301 (20MHz)
OSC
OSC1
OSC2
MF (VR1)
MF (VR2)
D. MODE 1
IRQ
WE
RE
CIP SELECT
SERIAL DATA
SERIAL DATA
CLOCK
LOAD
ZENC1
ZENC4
FNO
TELE
WIDE
ABSF
RESET
ENABLE
NEAR/FAR
CLOCK
LUMI
TO LENS DRIVE SECTION
IRDET
IC309 (E²PROM)
C. S
D. IN
D. OUT
CLK IN
IC301 (DIS MEMORY CONTROL MICRO PROCESSOR)
DATA DB0~DB7
ADDRESS MA0~MA4, MA9~MA11, MA14
VCTRL
IRQ
WE
RE
RESET
HCLR
HD
VD
FROM IC6001-25
IC201-30
IC202
SSG
MEMORY CONTROL
MOVING DETECTION
REFERENCE POINT MEMORY
FRONT OPERATION
FP501 FP4003
VREF H
IC204-1 3.3V
VREF L
IC204-32 1.3V
MF VR VR501
VR1
VR2
DIS
SW005
LENS DRIVE SECTION
IC707
CAM 5V
Q303
MIC SECTION
P4004 P4802
IR SENSOR
TO IC706-

	D0	D1	D2
AUTO	H	H	H
MANUAL	L	H	H
SPORTS	L	L	H
PORTRAIT	H	L	H
LOW LIGHT	H	L	L


VIDEO SIGNAL
DIGITAL Y SIGNAL
DIGITAL C SIGNAL
Y SIGNAL
R-Y SIGNAL
B-Y SIGNAL
1H DLY
1H DLY
LINE CONTRAST SUPPRESS
VERTICAL APERTURE
HORIZONTAL APERTURE
LPF/THREE LINE AVERAGE DET
LINE SELECT HOLD
WHITE BALANCE
COLOUR SEPARATION TIME SHARING
COLOUR GAIN CONTROL
LPF
COLOUR DIFFRENTIAL MATRIX
AVERAGE OB DATA DETECTION
AREA AVERAGE PIXCEL DATA DETECTION
HIGH LIGHT LOW LIGHT APERTURE
FALSE COLOUR SUPPRESS
GAIN/LEVEL ADJUSTMEMT
LUMINANCE PEAK DETECTION
YOUT
COUT
PWM PULSE GENE.
PWM
TO LENS DRIVE
BLKA
BFO
SYNC
CSPC
HPF2
HPF1
HPF3
VL PEAK DET
H PEAK DET
VH PEAK DET
DC PEAK DET
COUNTER
DC INTEGRATION
LPF
μCOM DATA
CLOCK
WRITE ENABLE
READ ENABLE
VCTL
DSP MICOM INTERFACE
ADDRESS
DATA
DB0~DB7
MA0~MA3, MA12~MA14, MA10
IC201-2 (VCTRL)
IC303 (LSI:ELECTRIC ZOOM FOR DIS)
IC201-30
IC202
SSG
HCLR
HD
VD
E. ZOOM PROCESSOR (FOR DIS)
V. ZOOM UP
DIS/E. ZOOM
GAIN α
GAIN (1-α)
H. ZOOM UP
NORMAL
DIS
C. E ZOOM/D. MIX PROCESSOR (SAME AS Y)
4bit→8bit CONV.
8bit→4bit CONV.
BLK
BF
SYNC
CSPC
VCTRL
WE
DATA MD0 ~ MD7
ADDRESS MA3~MA0, MA11, MA10
DIGITAL Y SIGNAL YM0~YM6
MEMORY Y SIGNAL YFM0~YFM6
DIGITAL C SIGNAL CM00~CM03
MEMORY C SIGNAL CFM3~CFM0
IC315 (D/A CONVERTER)
8bit 3CH D/A CONVERTER
Y
R-Y
B-Y
TO VIDEO
Y (IC315-18) 1.0Vp-p
R-Y (IC315-21) 0.7Vp-p
B-Y (IC315-23) 0.7Vp-p
STOP (20μsec./div.) COLOUR BAR
HD (IC303-100) 3.4Vp-p
BF (IC303-98) 3.4Vp-p
SYNC (IC303-97) 3.4Vp-p
CSPC (IC303-69) 4.5Vp-p
CAMERA OPERATION
AF/MF
WSET
BLC
DATE
FADE
FPJ051
FP301
AUTO
MANUAL
SPORTS
PORTRAIT
LOW LIGHT
D0 D1 D2
AUTO H H H
MANUAL L H H
SPORTS L L H
PORTRAIT H L H
LOW LIGHT H L L
H:OPEN
L:CONNECT WITH COMMON TERMINAL (GND)
<AF/MF>
<W-SET>
<BLC>
<DATE>
<FADE>
<D2>
<D1>
<D0>
<GND>
C. MODE 2
C. MODE 1
C. MODE 0
IC305 (AF/DSP/DIS MICRO PROCESSOR)
DATA DB0~DB7
ADDRESS AB0~AB6, AB9~AB14
IRQ
WE
RE
CIP SELECT
SERIAL DATA
SERIAL DATA
CLOCK
LOAD
SENSOR (CCD DRIVE)
IC201-16
IC201-22
DIS OPERATION
X301 [20MHz]
OSC
OSC1
OSC2
ZENC1
ZENC4
FNO
TELE
WIDE
ABSF
RESET
ENABLE
NEAR/FAR
CLOCK
LUMI
TO LENS DRIVE SECTION
IRDET
IC309 (E²PROM)
C. S
D. IN
D. OUT
CLK IN
IC301 (DIS MEMORY CONTROL MICRO PROCESSOR)
DATA DB0~DB7
ADDRESS MA0~MA4, MA9~MA11, MA14
VCTRL
IRQ
WE
RE
RESET
HCLR
HD
VD
FROM IC6001-25
IC201-30
MEMORY CONTROL
MOVING DETECTION
REFERENCE POINT MEMORY
YD7 ~ YD0
FRONT OPERATION
FP501
FP4003
VREF H
IC204-1 3.3V
VREF L
IC204-32 1.3V
MF (VR1)
MF (VR2)
MF VR VR501
VR1
VR2
DIS
SW005
D. MODE 1
LENS DRIVE SECTION
IC707
CAM 5V
Q303
MIC SECTION
P4004
P4802
IR SENSOR
IC308 (D/A CONVERTER)
TO SENSOR
IC204-2 OB CONT
IC201-3 SUB CONT
IC204-8 A/D CONT
IC204-18 AGC CONT
IC204-20 PEDE CONT
DATA
CLOCK
LOAD PULSE
DATA OUT
B-Y BAL
R-Y BAL
TO VIDEO
+5V
IC307 (D/A CONVERTER)
PWM OUT FROM IC302-31
TO IC706-5
LOAD PULSE
CLOCK
DATA
PWM
TO LENS DRIVE
IC707-10 Z. B (-)
IC707-12 Z. B (+)
IC706-12 HOLE BIAS
IC706-10 HOLE GAIN
IC705-5 ZOOM SPEED
REC C CONT
REC Y CONT
REC AUDIO CONT
TO VIDEO
+5V

3-5. LENS DRIVE BLOCK DIAGRAM


IC708-16 POWER-ON
7.0Vp-p (20msec./div.)
FOCUS MOTOR DRIVING

IC708-14 POWER-ON
7.0Vp-p (20msec./div.)
FOCUS MOTOR DRIVING

IC708-11 POWER-ON
7.0Vp-p (20msec./div.)
FOCUS MOTOR DRIVING

IC708-9 POWER-ON
7.0Vp-p (20msec./div.)
FOCUS MOTOR DRIVING

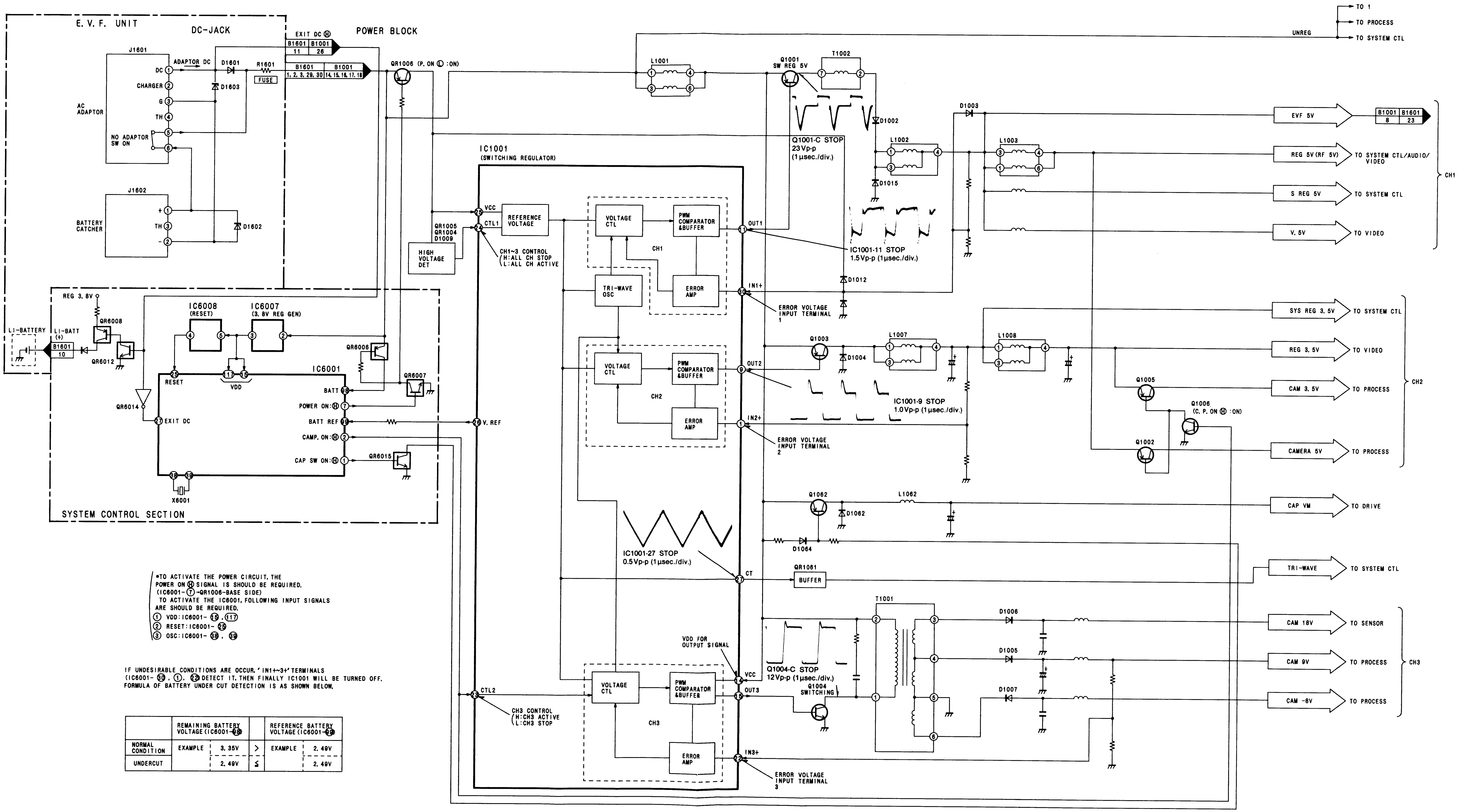
IC705-7 TELE
2V DC (10msec./div.)
ZMT+ 2V 0V

IC705-9 WIDE
2V DC (10msec./div.)
ZMT− 2V 0V

DC voltage which is changed depending on zoom condition.

PROCESS SECTION
IC302 (AD/AF/DSP)
SENSOR CIRCUIT
AF ANALOGUE SIGNAL PROCESS
PWM GENE
IC303
ZOOM
IC315
D/A
Y
R-Y
B-Y
IC305 (DSP/AF/DIS μ-COM)
ABSF
LED CNT
MRESET
MENABLE
CLK
NEAR/FAR
TELE
WIDE
ZENCX1
ZENCX4
LUMI Ⓗ
FNO
ZOOM TRACKING CURVE ALGORITHM
A/D CONVERTER
ZOOM A/D
MF/AF
VR1
VR2
FOCUS RING
LOAD
CLK
D.OUT
IC309
E²PROM
ZOOM LEVER
P303 5
V REF H (IC204-① :3.3V)
V REF L (IC204-㉜ :1.3V)
VREF-H (IC204-① :3.3V)
VREF-L (IC204-㉜ :1.3V)
CAMERA OPERATION
FP301 3
MF/AF
FRONT OPERATION (FOCUS RING)
FP4003 8
FP4003 7
IC308 (D/A CONVERTER)
D.IN
D.OUT
IC307 (D/A CONVERTER)
LOAD
CLK
D.IN
ZOOM SPEED
V REF +T
V REF −T
PWM
HOLE BIAS
HOLE GAIN
QR710
FP701 15
FOCUS ENCODER
FP701 14
LED CTL
QR701
LED DRIVE
IC708 (AF MOTOR DRIVE)
FP701 3
MT1
FP701 1
MT2
FP701 4
MT3
FP701 2
MT4
MOTOR DRIVE 1
MOTOR DRIVE 2
MOTOR DRIVE 3
MOTOR DRIVE 4
RESET
ENABLE
CLK
CW/CCW
IC705 (ZOOM MOTOR DRIVE)
NO REG
VCC
RCM
VC
IN2
IN1
OUT1
OUT2
T
W
Z
FP701 6
ZMT+
FP701 5
ZMT−
PP302-⑧
PP302-⑰
FP701 16
V REF (−)
FP701 18
ZOOM ENCODER
FP701 17
V REF (+)
IC707
REG 5V
ZOOM ENCODER
FOCUS ENCODER
PP302-⑪ (IRIS OPEN)
NO REG
Q704
IC706
ZOOM LENS
IRIS
FOCUS LENS
FP701 11
FP701 12
ALC MAIN
FP701 10
HALL OUT (+)
FP701 8
HALL OUT (−)
Q705
AMP
FP701 9
HALL IN (+)
FP701 7
HALL IN (−)
IC706
ZOOM MOTOR
HALL SENSOR
IRIS MOTOR
FOCUS MOTOR
M

3-6. POWER BLOCK DIAGRAM


E. V. F. UNIT
DC-JACK
POWER BLOCK
EXIT DC Ⓗ
B1601 11 B1001 26
J1601
AC ADAPTOR
DC ①
CHARGER ②
G ③
TH ④
⑤
NO ADAPTOR SW ON
⑥
ADAPTOR DC
D1601
D1603
R1601
FUSE
B1601 1, 2, 3, 29, 30 B1001 14, 15, 16, 17, 18
QR1006 (P. ON Ⓛ :ON)
J1602
BATTERY CATCHER
+ ①
TH ③
- ②
D1602
LI-BATTERY
LI-BATT (+)
B1601 10
REG 3. 8V
QR6008
QR6012
QR6014
IC6008 (RESET)
IC6007 (3. 8V REG GEN)
IC6001
RESET
VDD
BATT
POWER ON:Ⓗ
BATT REF
CAMP. ON:Ⓗ
CAP SW ON:Ⓗ
EXIT DC
QR6006
QR6007
QR6015
X6001
SYSTEM CONTROL SECTION
IC1001 (SWITCHING REGULATOR)
VCC
CTL1
REFERENCE VOLTAGE
QR1005 QR1004 D1009
HIGH VOLTAGE DET
CH1~3 CONTROL (H:ALL CH STOP L:ALL CH ACTIVE
V. REF
VOLTAGE CTL
PWM COMPARATOR &BUFFER
CH1
TRI-WAVE OSC
ERROR AMP
CH2
CH3
CTL2
CH3 CONTROL (H:CH3 ACTIVE L:CH3 STOP
IC1001-27 STOP 0.5Vp-p (1µsec./div.)
VDD FOR OUTPUT SIGNAL
OUT1
IN1+
OUT2
IN2+
CT
VCC
OUT3
IN3+
ERROR VOLTAGE INPUT TERMINAL 1
ERROR VOLTAGE INPUT TERMINAL 2
ERROR VOLTAGE INPUT TERMINAL 3
L1001
Q1001 SW REG 5V
T1002
D1002
Q1001-C STOP 23Vp-p (1µsec./div.)
L1002
D1015
IC1001-11 STOP 1.5Vp-p (1µsec./div.)
D1012
D1003
L1003
UNREG
TO 1
TO PROCESS
TO SYSTEM CTL
EVF 5V
B1001 8 B1601 23
REG 5V (RF 5V)
TO SYSTEM CTL/AUDIO/VIDEO
S REG 5V
TO SYSTEM CTL
V. 5V
TO VIDEO
CH1
Q1003
D1004
L1007
L1008
IC1001-9 STOP 1.0Vp-p (1µsec./div.)
SYS REG 3. 5V
TO SYSTEM CTL
REG 3. 5V
TO VIDEO
Q1005
Q1006 (C. P. ON Ⓗ :ON)
Q1002
CAM 3. 5V
TO PROCESS
CAMERA 5V
TO PROCESS
CH2
Q1062
D1062
L1062
D1064
CAP VM
TO DRIVE
QR1061
BUFFER
TRI-WAVE
TO SYSTEM CTL
T1001
Q1004-C STOP 12Vp-p (1µsec./div.)
Q1004 SWITCHING
D1006
D1005
D1007
CAM 18V
TO SENSOR
CAM 9V
TO PROCESS
CAM -8V
TO PROCESS
CH3

•TO ACTIVATE THE POWER CIRCUIT, THE POWER ON Ⓗ SIGNAL IS SHOULD BE REQUIRED. (IC6001-⑦→QR1006-BASE SIDE)

TO ACTIVATE THE IC6001, FOLLOWING INPUT SIGNALS ARE SHOULD BE REQUIRED.

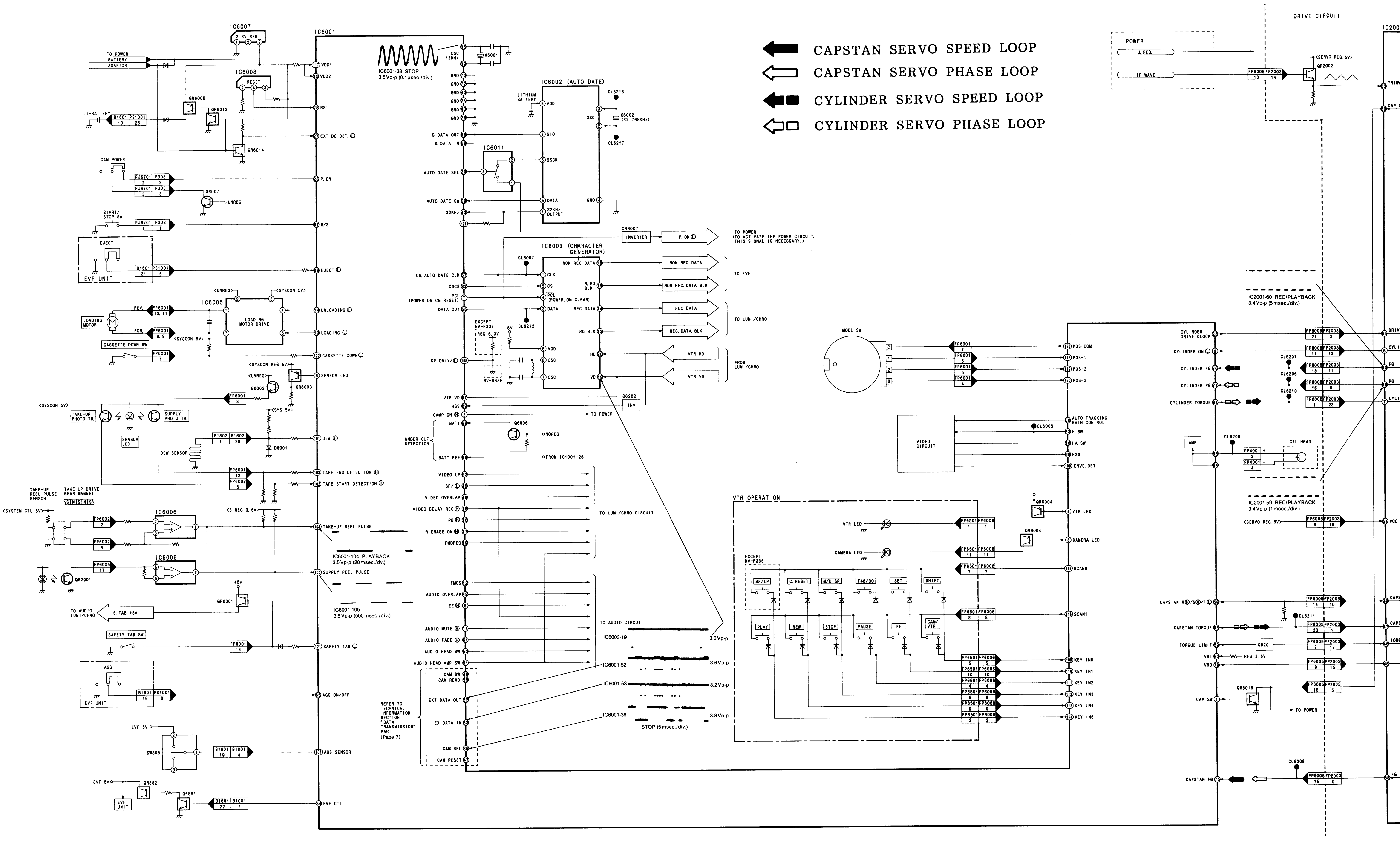
① VDD: IC6001-⑮, (117)
② RESET: IC6001-㉕
③ OSC: IC6001-(38), (39)

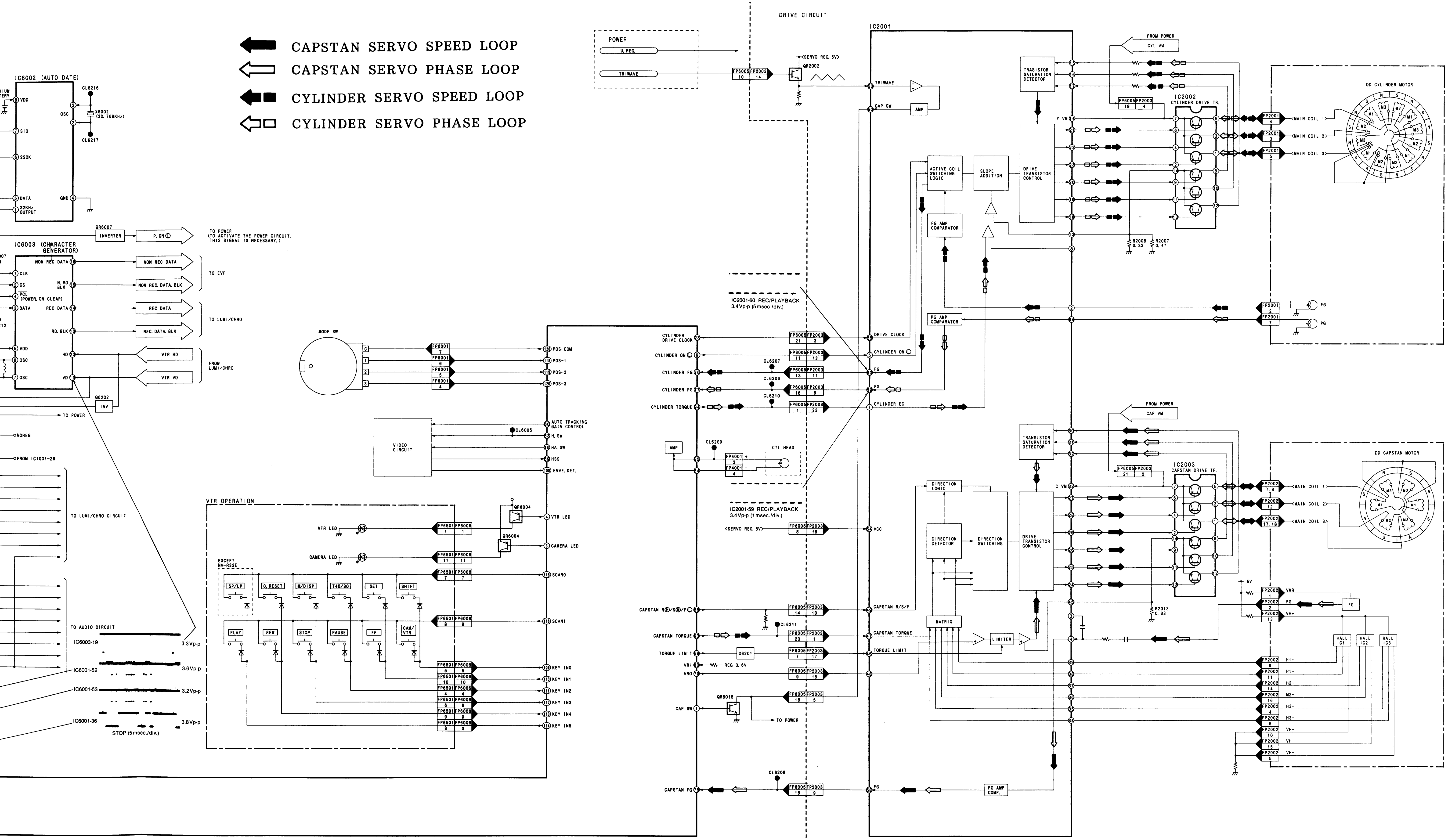
IF UNDESIRABLE CONDITIONS ARE OCCUR, 'IN1+~3+' TERMINALS (IC6001-(30), ①, ㉒ DETECT IT, THEN FINALLY IC1001 WILL BE TURNED OFF. FORMULA OF BATTERY UNDER CUT DETECTION IS AS SHOWN BELOW.

	REMAINING BATTERY VOLTAGE (IC6001-(98))			REFERENCE BATTERY VOLTAGE (IC6001-(99))	
NORMAL CONDITION	EXAMPLE	3. 35V	>	EXAMPLE	2. 49V
UNDERCUT		2. 49V	≦		2. 49V

Back Page:
LENS DRIVE Section

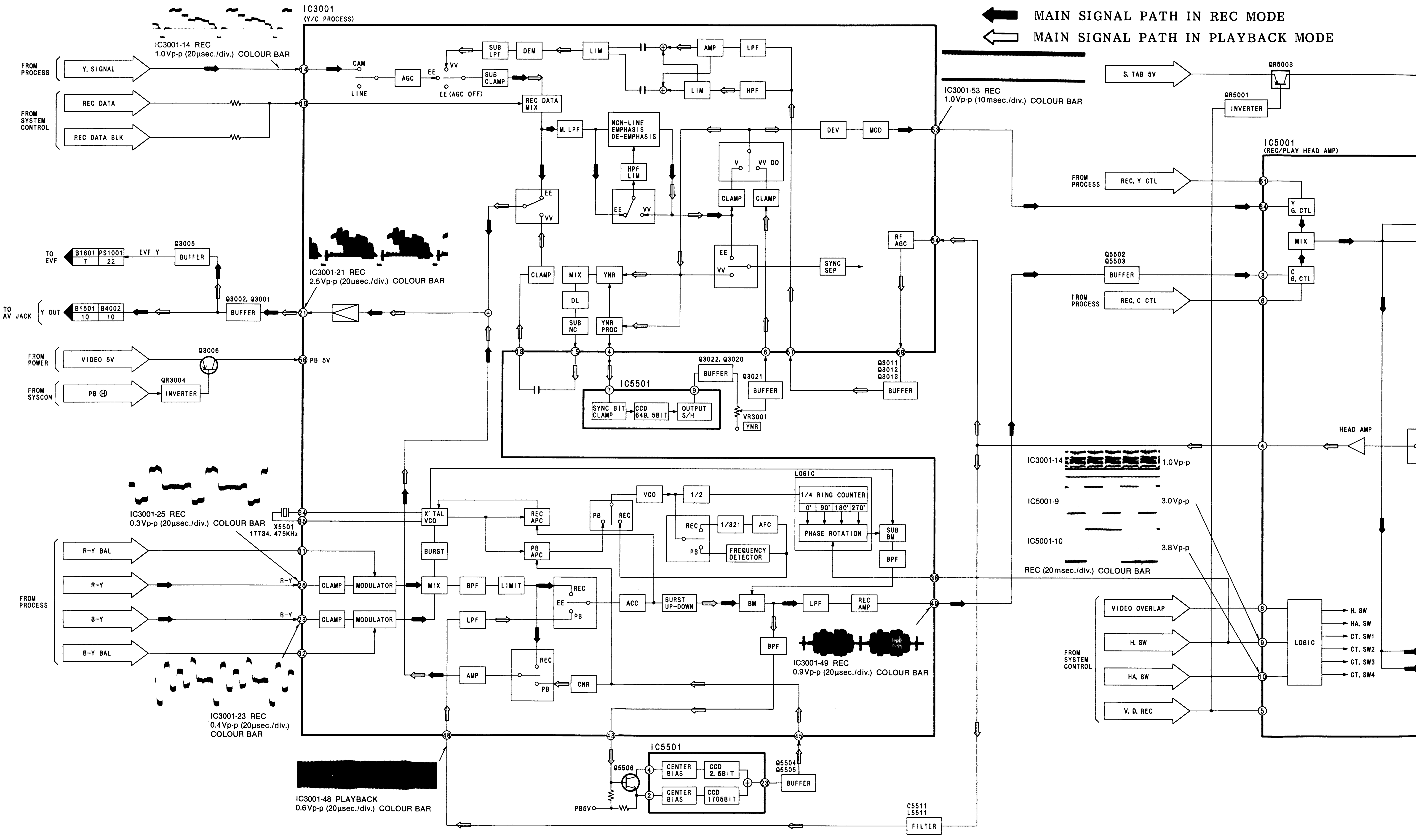
3-7. SYSTEM CONTROL & SERVO BLOCK DIAGRAM


CAPSTAN SERVO SPEED LOOP
CAPSTAN SERVO PHASE LOOP
CYLINDER SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP
DRIVE CIRCUIT
POWER
U. REG.
TRIWAVE
IC6007
3.8V REG.
IC6001
IC6008
RESET
TO POWER BATTERY ADAPTOR
QR6008
QR6012
QR6014
LI-BATTERY
CAM POWER
Q6007
UNREG
START/STOP SW
EJECT
EVF UNIT
IC6005
LOADING MOTOR DRIVE
LOADING MOTOR
REV.
FOR.
CASSETTE DOWN SW
SYSCON 5V
SYSCON REG 5V
QR6003
Q6002
SENSOR LED
TAKE-UP PHOTO TR.
SUPPLY PHOTO TR.
DEW SENSOR
D6001
TAKE-UP REEL PULSE SENSOR
TAKE-UP DRIVE GEAR MAGNET
SYSTEM CTL 5V
S REG 3.5V
IC6006
QR2001
QR6001
TO AUDIO LUMI/CHRO
S. TAB +5V
SAFETY TAB SW
AGS
SW895
EVF 5V
QR882
QR881
VDD1
VDD2
RST
EXT DC DET.
P. ON
S/S
EJECT
UNLOADING
LOADING
CASSETTE DOWN
SENSOR LED
DEW
TAPE END DETECTION
TAPE START DETECTION
TAKE-UP REEL PULSE
SUPPLY REEL PULSE
SAFETY TAB
AGS ON/OFF
AGS SENSOR
EVF CTL
IC6001-104 PLAYBACK 3.5Vp-p (20msec./div.)
IC6001-105 3.5Vp-p (500msec./div.)
IC6001-38 STOP 3.5Vp-p (0.1µsec./div.)
OSC 12MHz
X6001
GND
S. DATA OUT
S. DATA IN
AUTO DATE SEL
AUTO DATE SW
32KHz
CG. AUTO DATE CLK
CGCS
PCL (POWER ON CG RESET)
DATA OUT
SP ONLY/
VTR VD
HSS
CAMP ON
BATT
UNDER-CUT DETECTION
BATT REF
Q6006
NOREG
FROM IC1001-28
VIDEO LP
SP/
VIDEO OVERLAP
VIDEO DELAY REC
PB
R ERASE ON
FMDREC
TO LUMI/CHRO CIRCUIT
FMCS
AUDIO OVERLAP
EE
AUDIO MUTE
AUDIO FADE
AUDIO HEAD SW
AUDIO HEAD AMP SW
TO AUDIO CIRCUIT
CAM SW
CAM REMO
EXT DATA OUT
EX DATA IN
CAM SEL
CAM RESET
REFER TO TECHNICAL INFORMATION SECTION "DATA TRANSMISSION" PART (Page 7)
IC6003-19
IC6001-52
IC6001-53
IC6001-36
3.3Vp-p
3.6Vp-p
3.2Vp-p
3.8Vp-p
STOP (5msec./div.)
IC6002 (AUTO DATE)
LITHIUM BATTERY
VDD
OSC
SIO
SCK
DATA
32KHz OUTPUT
GND
CL6216
CL6217
X6002 (32.768KHz)
IC6011
IC6003 (CHARACTER GENERATOR)
CL6007
CL6212
EXCEPT NV-R33E
REG 6.3V
NV-R33E
NON REC DATA
N. RD BLK
PCL (POWER ON CLEAR)
REC DATA
RD. BLK
HD
VD
QR6007
INVERTER
P. ON
TO POWER (TO ACTIVATE THE POWER CIRCUIT, THIS SIGNAL IS NECESSARY.)
NON REC DATA
NON REC. DATA. BLK
TO EVF
REC DATA
REC. DATA. BLK
TO LUMI/CHRO
VTR HD
VTR VD
FROM LUMI/CHRO
Q6202
INV
TO POWER
MODE SW
POS-COM
POS-1
POS-2
POS-3
VIDEO CIRCUIT
CL6005
AUTO TRACKING GAIN CONTROL
H. SW
HA. SW
HSS
ENVE. DET.
VTR OPERATION
QR6004
VTR LED
CAMERA LED
EXCEPT NV-R33E
SP/LP
C. RESET
M/DISP
T45/30
SET
SHIFT
PLAY
REW
STOP
PAUSE
FF
CAM/VTR
SCAN0
SCAN1
KEY IN0
KEY IN1
KEY IN2
KEY IN3
KEY IN4
KEY IN5
CYLINDER DRIVE CLOCK
CYLINDER ON
CYLINDER FG
CYLINDER PG
CYLINDER TORQUE
CL6207
CL6206
CL6210
AMP
CL6209
CTL HEAD
IC2001-60 REC/PLAYBACK 3.4Vp-p (5msec./div.)
IC2001-59 REC/PLAYBACK 3.4Vp-p (1msec./div.)
SERVO REG. 5V
QR2002
CAPSTAN R/S/F
CL6211
CAPSTAN TORQUE
TORQUE LIMIT
Q6201
VRI
VRO
REG 3.6V
QR6015
CAP SW
TO POWER
CL6208
CAPSTAN FG
IC200
TRIW
CAP
DRIV
CYLI
FG
PG
VCC
CAPS
TORQ

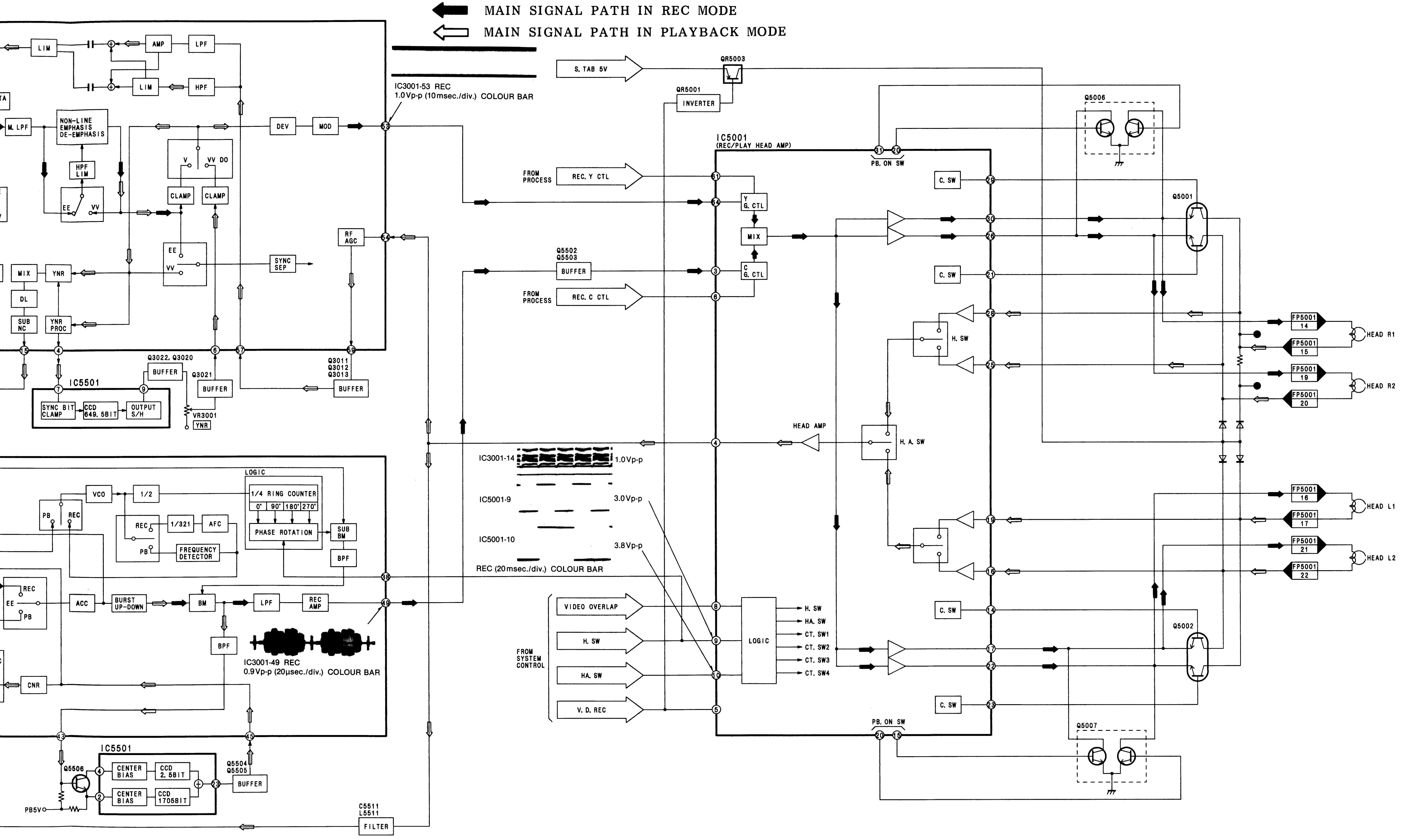

CAPSTAN SERVO SPEED LOOP
CAPSTAN SERVO PHASE LOOP
CYLINDER SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP
IC6002 (AUTO DATE)
X6002 (32.768KHz)
CL6216
CL6217
VDD
OSC
SIO
2SCK
DATA
GND
32KHz OUTPUT
QR6007
INVERTER
P. ON
TO POWER (TO ACTIVATE THE POWER CIRCUIT. THIS SIGNAL IS NECESSARY.)
IC6003 (CHARACTER GENERATOR)
NON REC DATA
N. RD BLK
NON REC. DATA. BLK
TO EVF
CLK
CS
PCL (POWER ON CLEAR)
REC DATA
RD. BLK
REC. DATA. BLK
TO LUMI/CHRO
HD
VD
VTR HD
VTR VD
FROM LUMI/CHRO
Q6202
INV
TO POWER
NOREG
FROM IC1001-26
TO LUMI/CHRO CIRCUIT
TO AUDIO CIRCUIT
IC6003-19
3.3Vp-p
IC6001-52
3.6Vp-p
IC6001-53
3.2Vp-p
IC6001-36
3.8Vp-p
STOP (5msec./div.)
MODE SW
FP6001
POS-COM
POS-1
POS-2
POS-3
VIDEO CIRCUIT
AUTO TRACKING GAIN CONTROL
CL6005
H. SW
HA. SW
HSS
ENVE. DET.
VTR OPERATION
QR6004
VTR LED
CAMERA LED
FP6501
FP6006
EXCEPT NV-R33E
SP/LP
C. RESET
M/DISP
T45/30
SET
SHIFT
SCAN0
SCAN1
PLAY
REW
STOP
PAUSE
FF
CAM/VTR
KEY IN0
KEY IN1
KEY IN2
KEY IN3
KEY IN4
KEY IN5
POWER
U. REG.
TRIWAVE
DRIVE CIRCUIT
FP6005
FP2003
<SERVO REG. 5V>
QR2002
CYLINDER DRIVE CLOCK
CYLINDER ON
CYLINDER FG
CYLINDER PG
CYLINDER TORQUE
CL6207
CL6206
CL6210
IC2001-60 REC/PLAYBACK
3.4Vp-p (5msec./div.)
IC2001-59 REC/PLAYBACK
3.4Vp-p (1msec./div.)
AMP
CL6209
CTL HEAD
FP4001
<SERVO REG. 5V>
CAPSTAN R/S/F
CAPSTAN TORQUE
TORQUE LIMIT
VRI
VRO
REG 3.6V
Q6201
CL6211
QR6015
CAP SW
TO POWER
CAPSTAN FG
CL6208
IC2001
TRIWAVE
CAP SW
AMP
DRIVE CLOCK
CYLINDER ON
FG
PG
CYLINDER EC
VCC
CAPSTAN R/S/F
CAPSTAN TORQUE
TORQUE LIMIT
FG
TRASISTOR SATURATION DETECTOR
ACTIVE COIL SWITCHING LOGIC
SLOPE ADDITION
DRIVE TRANSISTOR CONTROL
FG AMP COMPARATOR
PG AMP COMPARATOR
Y VM
FROM POWER
CYL VM
IC2002 CYLINDER DRIVE TR.
R2008 0.33
R2007 0.47
FP2001
DD CYLINDER MOTOR
MAIN COIL 1
MAIN COIL 2
MAIN COIL 3
FG
PG
TRANSISTOR SATURATION DETECTOR
FROM POWER
CAP VM
C VM
IC2003 CAPSTAN DRIVE TR.
DIRECTION LOGIC
DIRECTION DETECTOR
DIRECTION SWITCHING
DRIVE TRANSISTOR CONTROL
MATRIX
LIMITER
R2013 0.33
FG AMP COMP.
DD CAPSTAN MOTOR
FP2002
VMR
FG
VH+
HALL IC1
HALL IC2
HALL IC3
H1+
H1-
H2+
M2-
H3+
H3-
VH-
5V

Next Page:
LUMI./CHRO. & H.A. Section

3-8. LUMINANCE/CHROMINANCE & HEAD AMP BLOCK DIAGRAM

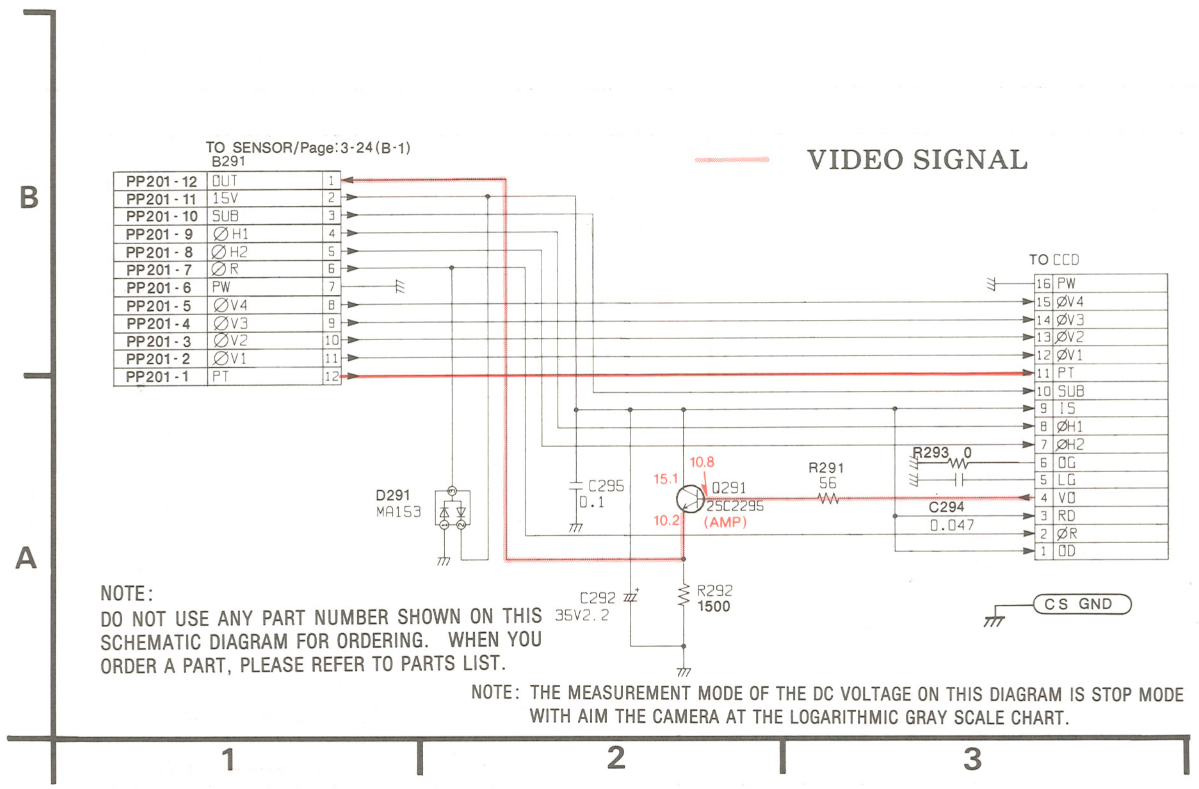

MAIN SIGNAL PATH IN REC MODE
MAIN SIGNAL PATH IN PLAYBACK MODE
IC3001
(Y/C PROCESS)
IC3001-14 REC
1.0Vp-p (20µsec./div.) COLOUR BAR
FROM PROCESS
Y. SIGNAL
FROM SYSTEM CONTROL
REC DATA
REC DATA BLK
CAM
LINE
AGC
EE
VV
EE (AGC OFF)
SUB LPF
DEM
LIM
AMP
LPF
SUB CLAMP
LIM
HPF
REC DATA MIX
M. LPF
NON-LINE EMPHASIS DE-EMPHASIS
HPF LIM
DEV
MOD
V
VV DO
CLAMP
CLAMP
EE
VV
SYNC SEP
RF AGC
IC3001-53 REC
1.0Vp-p (10msec./div.) COLOUR BAR
IC3001-21 REC
2.5Vp-p (20µsec./div.) COLOUR BAR
TO EVF
B1601
PS1001
7
22
EVF Y
Q3005
BUFFER
TO AV JACK
Y OUT
B1501
B4002
10
10
Q3002, Q3001
BUFFER
CLAMP
MIX
YNR
DL
SUB NC
YNR PROC
FROM POWER
VIDEO 5V
Q3006
PB 5V
FROM SYSCON
PB Ⓗ
QR3004
INVERTER
IC5501
SYNC BIT CLAMP
CCD 649.5BIT
OUTPUT S/H
Q3022, Q3020
BUFFER
Q3021
BUFFER
VR3001
YNR
Q3011
Q3012
Q3013
BUFFER
IC3001-25 REC
0.3Vp-p (20µsec./div.) COLOUR BAR
X5501
17734.475KHz
X' TAL VCO
REC APC
PB APC
BURST
VCO
1/2
PB
REC
REC
1/321
AFC
PB
FREQUENCY DETECTOR
LOGIC
1/4 RING COUNTER
0°
90°
180°
270°
PHASE ROTATION
SUB BM
BPF
FROM PROCESS
R-Y BAL
R-Y
B-Y
B-Y BAL
R-Y
B-Y
CLAMP
MODULATOR
CLAMP
MODULATOR
MIX
BPF
LIMIT
REC
EE
PB
ACC
BURST UP-DOWN
BM
LPF
REC AMP
LPF
BPF
REC
AMP
PB
CNR
IC3001-49 REC
0.9Vp-p (20µsec./div.) COLOUR BAR
IC3001-23 REC
0.4Vp-p (20µsec./div.)
COLOUR BAR
IC5501
CENTER BIAS
CCD 2.5BIT
CENTER BIAS
CCD 1705BIT
Q5506
Q5504
Q5505
BUFFER
PB5V
IC3001-48 PLAYBACK
0.6Vp-p (20µsec./div.) COLOUR BAR
C5511
L5511
FILTER
S. TAB 5V
QR5003
QR5001
INVERTER
IC5001
(REC/PLAY HEAD AMP)
FROM PROCESS
REC. Y CTL
Y G. CTL
MIX
Q5502
Q5503
BUFFER
C G. CTL
FROM PROCESS
REC. C CTL
HEAD AMP
IC3001-14
1.0Vp-p
IC5001-9
3.0Vp-p
IC5001-10
3.8Vp-p
REC (20msec./div.) COLOUR BAR
FROM SYSTEM CONTROL
VIDEO OVERLAP
H. SW
HA. SW
V. D. REC
LOGIC
H. SW
HA. SW
CT. SW1
CT. SW2
CT. SW3
CT. SW4
14
19
53
54
21
58
18
15
4
6
57
59
7
9
34
35
31
25
23
32
38
49
48
43
45
4
2
23
61
64
3
6
4
8
9
10
5

AGRAM



MAIN SIGNAL PATH IN REC MODE
MAIN SIGNAL PATH IN PLAYBACK MODE
LIM
AMP
LPF
HPF
M. LPF
NON-LINE EMPHASIS DE-EMPHASIS
HPF LIM
EE
VV
V
VV DO
CLAMP
DEV
MOD
RF AGC
SYNC SEP
MIX
YNR
DL
SUB NC
YNR PROC
IC5501
SYNC BIT CLAMP
CCD 649. 5BIT
OUTPUT S/H
Q3022, Q3020
BUFFER
Q3021
VR3001
YNR
Q3011
Q3012
Q3013
IC3001-53 REC
1.0Vp-p (10msec./div.) COLOUR BAR
S. TAB 5V
QR5003
QR5001
INVERTER
IC5001
(REC/PLAY HEAD AMP)
PB. ON SW
FROM PROCESS
REC. Y CTL
Y G. CTL
Q5502
Q5503
REC. C CTL
C G. CTL
C. SW
Q5006
Q5001
Q5002
Q5007
H. SW
H. A. SW
HEAD AMP
FP5001 14
FP5001 15
FP5001 19
FP5001 20
FP5001 16
FP5001 17
FP5001 21
FP5001 22
HEAD R1
HEAD R2
HEAD L1
HEAD L2
IC3001-14
1.0Vp-p
IC5001-9
3.0Vp-p
IC5001-10
3.8Vp-p
REC (20msec./div.) COLOUR BAR
LOGIC
1/4 RING COUNTER
0° 90° 180° 270°
PHASE ROTATION
SUB BM
BPF
VCO
1/2
PB
REC
1/321
AFC
FREQUENCY DETECTOR
ACC
BURST UP-DOWN
BM
REC AMP
IC3001-49 REC
0.9Vp-p (20µsec./div.) COLOUR BAR
CNR
CENTER BIAS
CCD 2. 5BIT
CCD 1705BIT
Q5506
Q5504
Q5505
PB5V
C5511
L5511
FILTER
FROM SYSTEM CONTROL
VIDEO OVERLAP
H. SW
HA. SW
V. D. REC
H. SW
HA. SW
CT. SW1
CT. SW2
CT. SW3
CT. SW4

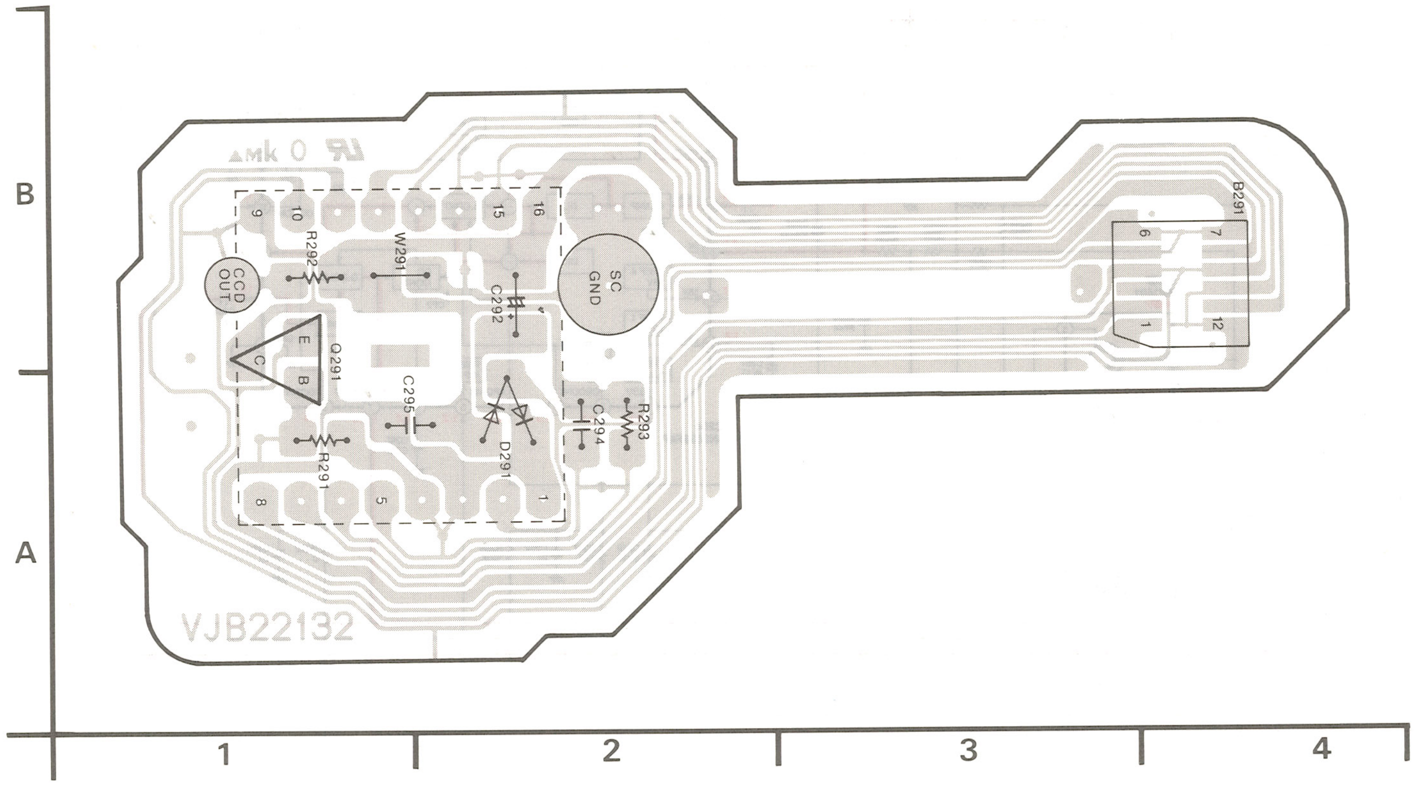
3-9. CCD FLEXIBLE CARD SCHEMATIC DIAGRAM


VIDEO SIGNAL
TO SENSOR/Page:3-24(B-1)
B291
PP201-12 OUT 1
PP201-11 15V 2
PP201-10 SUB 3
PP201-9 ∅H1 4
PP201-8 ∅H2 5
PP201-7 ∅R 6
PP201-6 PW 7
PP201-5 ∅V4 8
PP201-4 ∅V3 9
PP201-3 ∅V2 10
PP201-2 ∅V1 11
PP201-1 PT 12
D291
MA153
C295
0.1
15.1
10.8
10.2
Q291
2SC2295
(AMP)
R291
56
R293 0
C294
0.047
C292
35V2.2
R292
1500
TO CCD
16 PW
15 ∅V4
14 ∅V3
13 ∅V2
12 ∅V1
11 PT
10 SUB
9 IS
8 ∅H1
7 ∅H2
6 OG
5 LG
4 VO
3 RD
2 ∅R
1 OD
CS GND
B
A
1
2
3

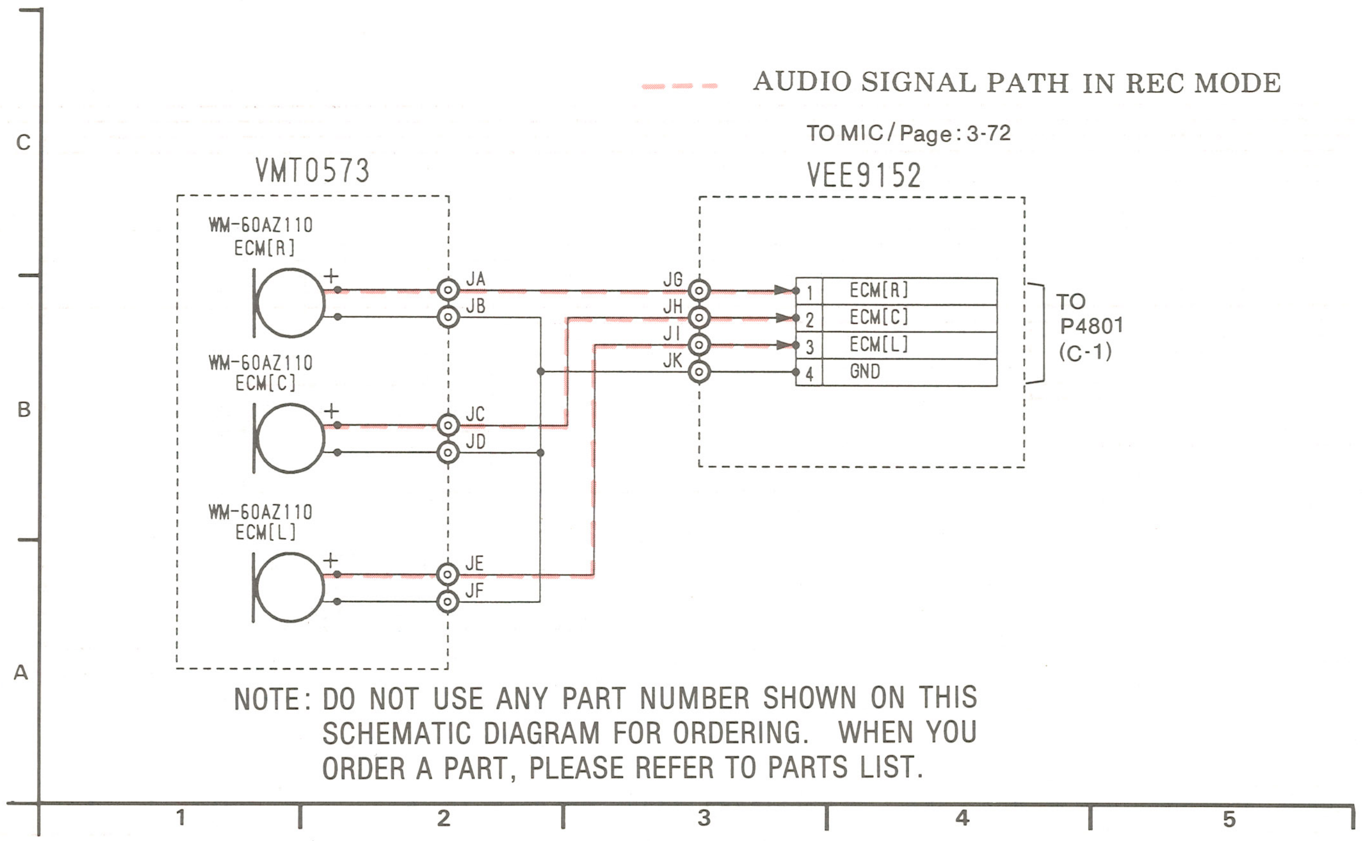
NOTE:
DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

3-10. CCD FLEXIBLE CARD C.B.A. (VEP22132C)


B
A
1
2
3
4
CCD OUT
9
10
15
16
R292
W291
C292
SC GND
Q291
E
C
B
C295
D291
C294
R293
R291
8
5
1
B291
6
7
1
12
VJB22132

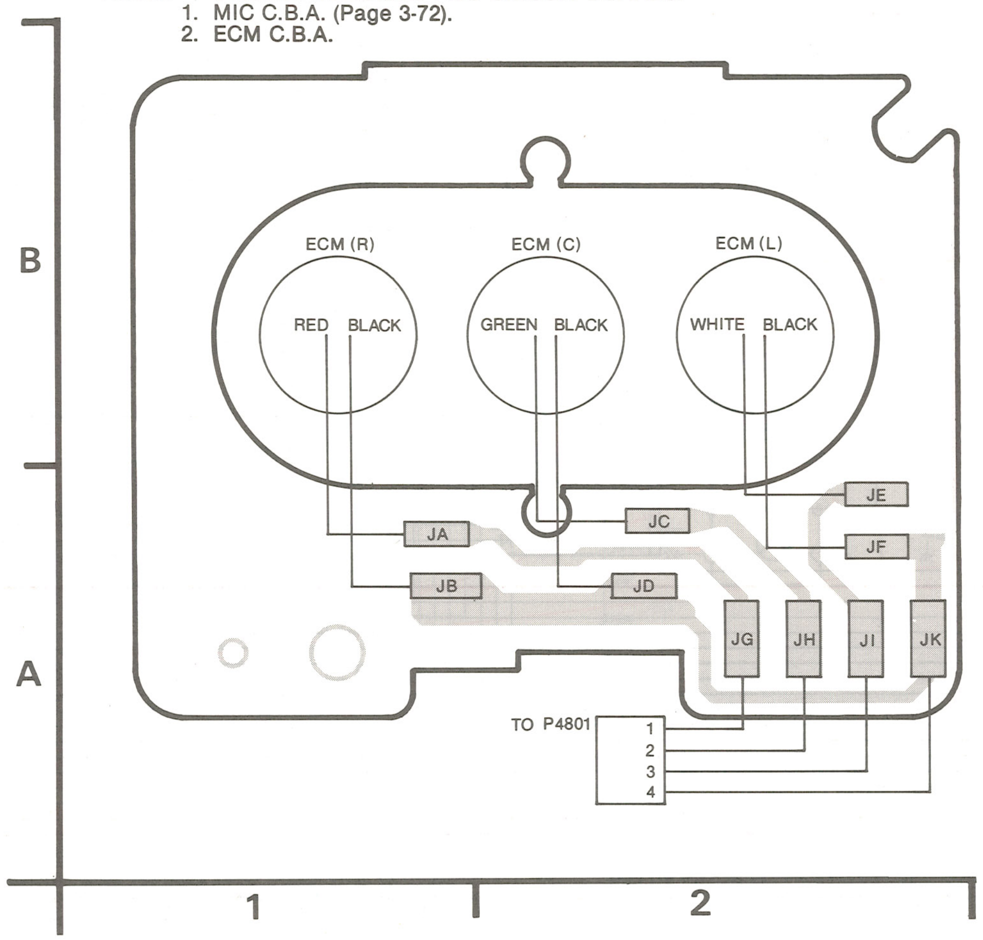
3-11. ECM SCHEMATIC DIAGRAM


AUDIO SIGNAL PATH IN REC MODE
TO MIC/Page:3-72
VMT0573
VEE9152
WM-60AZ110
ECM[R]
WM-60AZ110
ECM[C]
WM-60AZ110
ECM[L]
JA
JB
JC
JD
JE
JF
JG
JH
JI
JK
1 ECM[R]
2 ECM[C]
3 ECM[L]
4 GND
TO
P4801
(C-1)
C
B
A
1
2
3
4
5

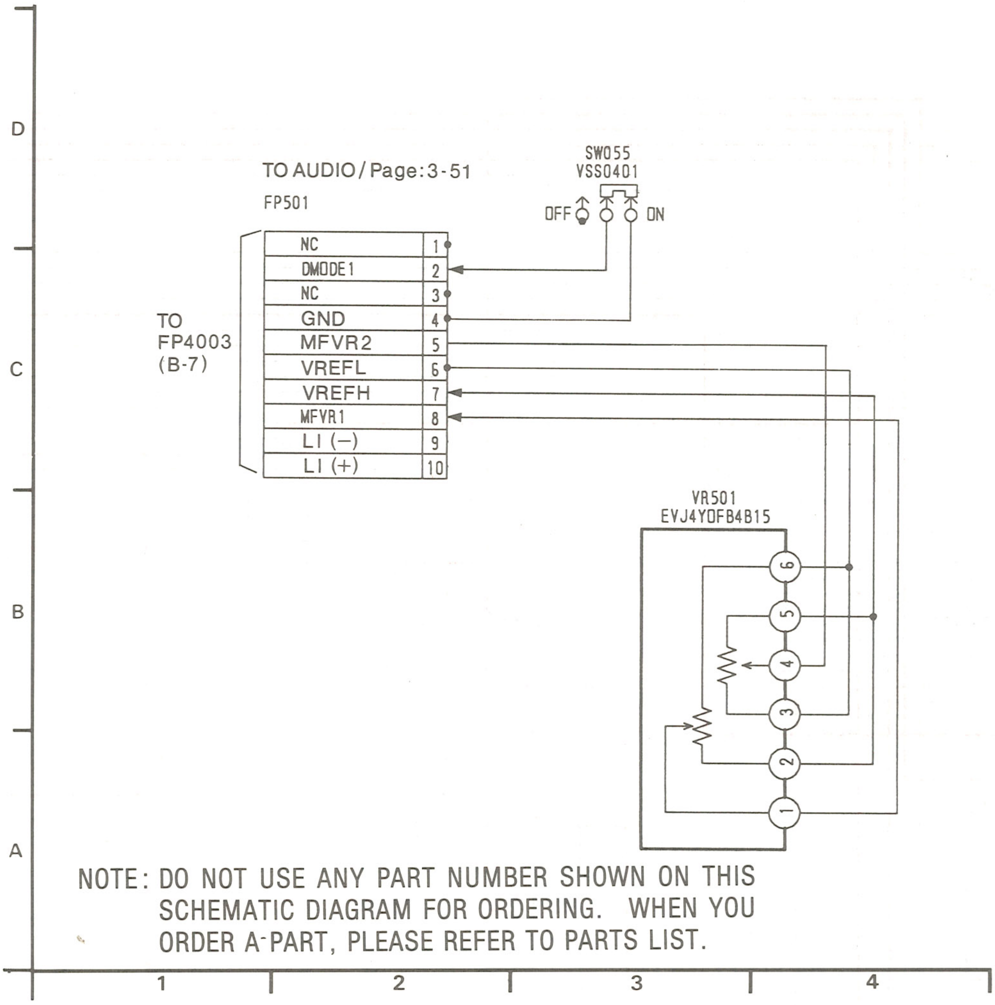
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-12. ECM C.B.A. (VEK7290)

NOTE: ∗ VEK7290 CONSISTS TWO CIRCUIT BOARDS.
1. MIC C.B.A. (Page 3-72).
2. ECM C.B.A.

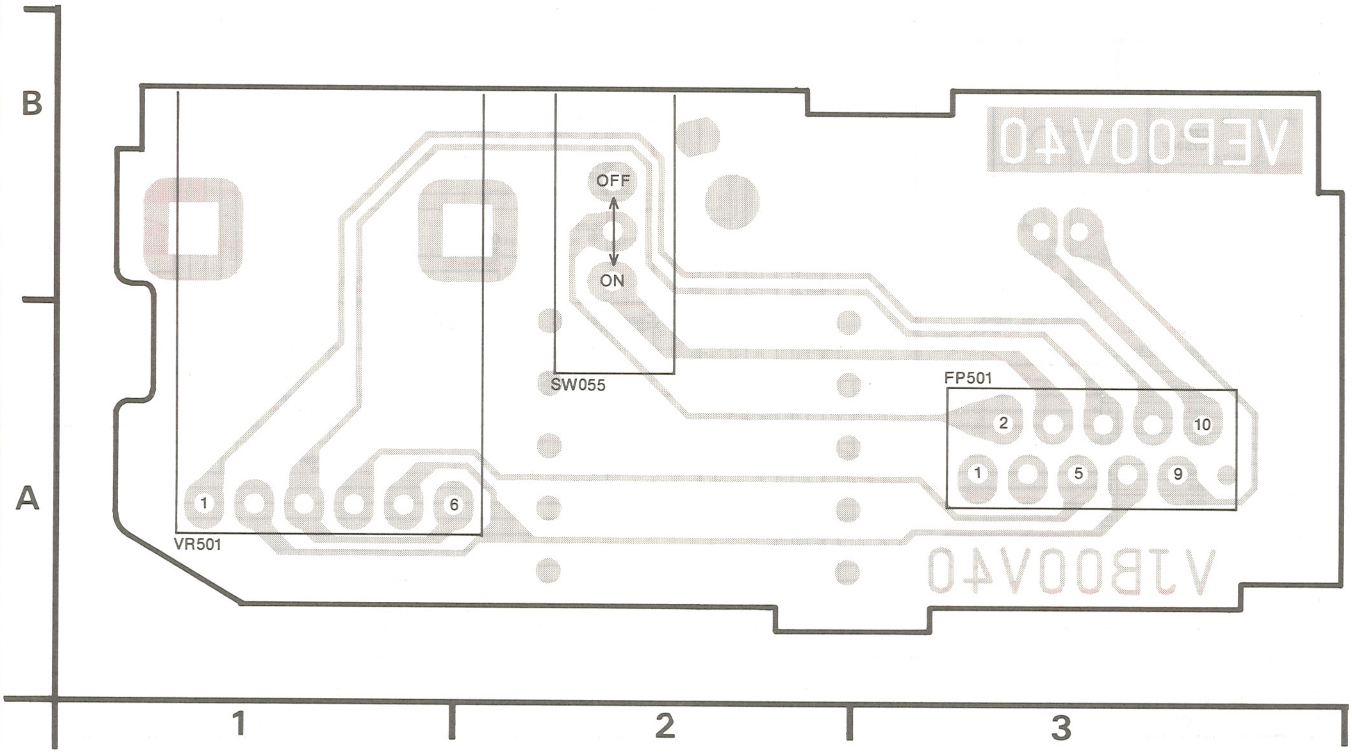

ECM (R)
ECM (C)
ECM (L)
RED
BLACK
GREEN
BLACK
WHITE
BLACK
JA
JB
JC
JD
JE
JF
JG
JH
JI
JK
TO P4801
1
2
3
4
B
A
1
2

3-13. FRONT OPERATION SCHEMATIC DIAGRAM


D
C
B
A
TO AUDIO / Page: 3-51
FP501
SW055
VSS0401
OFF
ON
TO
FP4003
(B-7)
NC 1
DMODE1 2
NC 3
GND 4
MFVR2 5
VREFL 6
VREFH 7
MFVR1 8
LI (−) 9
LI (+) 10
VR501
EVJ4YDFB4B15
1
2
3
4
5
6
1
2
3
4

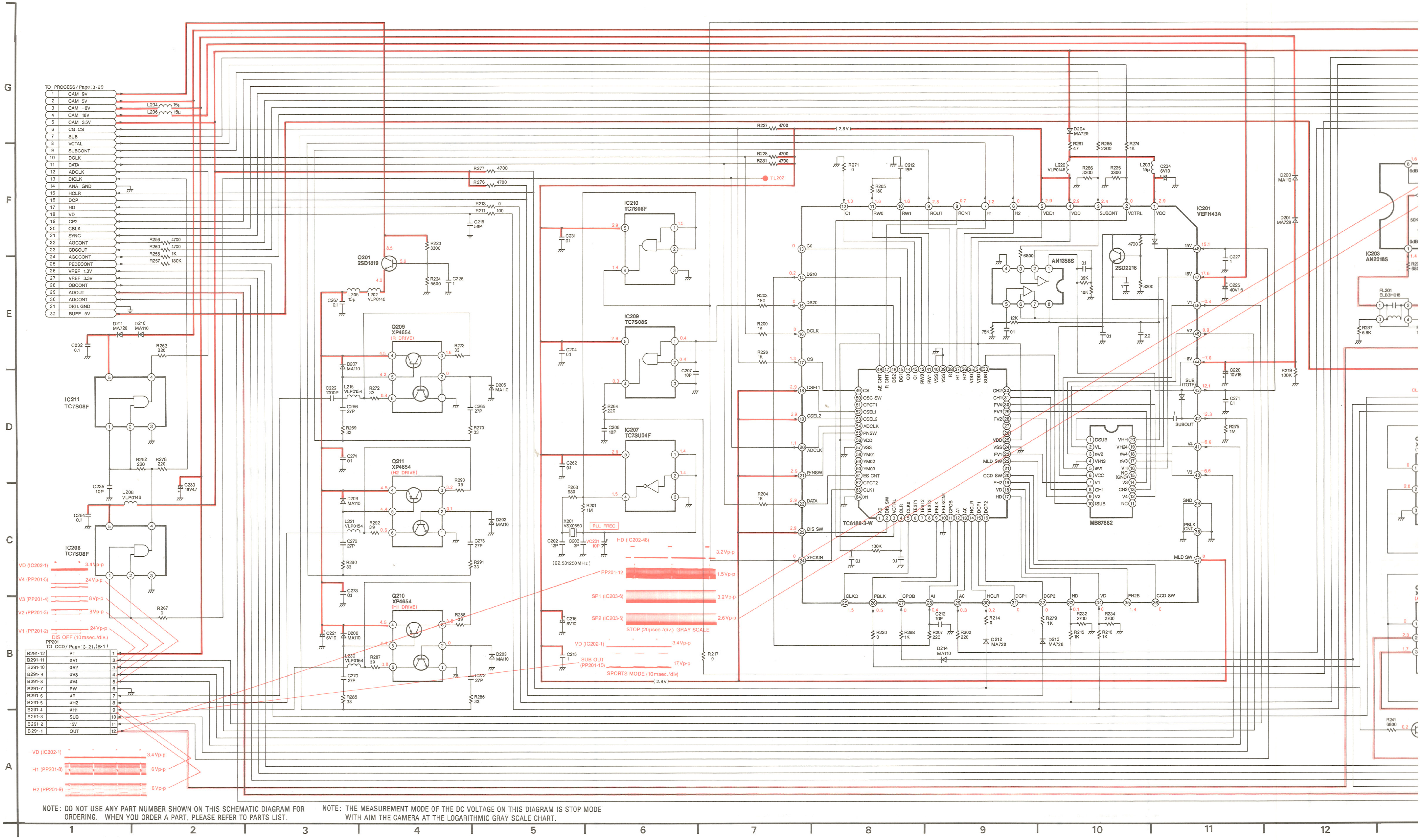
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A-PART, PLEASE REFER TO PARTS LIST.

3-14. FRONT OPERATION C.B.A. (VEK7346)


B
A
OFF
ON
SW055
VR501
1
6
FP501
2
10
1
5
9
1
2
3

Next Page:
SENSOR Section

3-15. SENSOR SCHEMATIC DIAGRAM

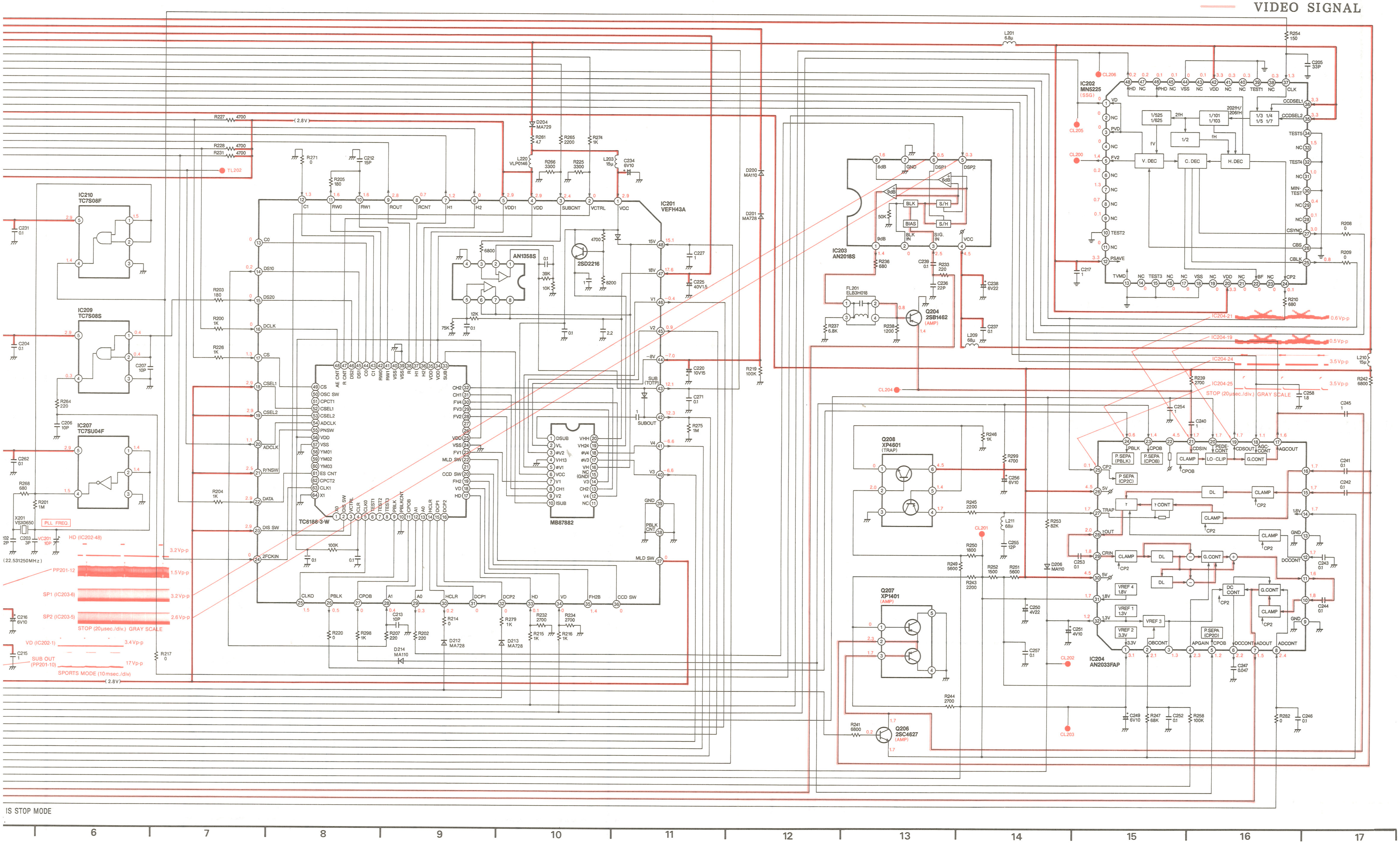


TO PROCESS / Page : 3-29
1 CAM 9V
2 CAM 5V
3 CAM −8V
4 CAM 18V
5 CAM 3.5V
6 CG. CS
7 SUB
8 VCTAL
9 SUBCONT
10 DCLK
11 DATA
12 ADCLK
13 DICLK
14 ANA. GND
15 HCLR
16 DCP
17 HD
18 VD
19 CP2
20 CBLK
21 SYNC
22 AGCOUT
23 CDSOUT
24 AGCCONT
25 PEDECONT
26 VREF 1.3V
27 VREF 3.3V
28 OBCONT
29 ADOUT
30 ADCONT
31 DIGI. GND
32 BUFF 5V
PP201
TO CCD / Page : 3-21 (B-1)
B291-12 PT 1
B291-11 øV1 2
B291-10 øV2 3
B291-9 øV3 4
B291-8 øV4 5
B291-7 PW 6
B291-6 øR 7
B291-5 øH2 8
B291-4 øH1 9
B291-3 SUB 10
B291-2 15V 11
B291-1 OUT 12
IC211 TC7S08F
IC208 TC7S08F
IC210 TC7S08F
IC209 TC7S08S
IC207 TC7SU04F
Q201 2SD1819
Q209 XP4654 (R DRIVE)
Q211 XP4654 (H2 DRIVE)
Q210 XP4654 (H1 DRIVE)
IC202 TC6186-3-W
IC203 MB87882
IC201 VEFH43A
IC203 AN2018S
AN1358S
2SD2216
X201 VSX0650
(22.531250MHz)
PLL FREQ.
TL202
VD (IC202-1) 3.4Vp-p
V4 (PP201-5) 24Vp-p
V3 (PP201-4) 8Vp-p
V2 (PP201-3) 8Vp-p
V1 (PP201-2) 24Vp-p
DIS OFF (10msec./div.)
VD (IC202-1) 3.4Vp-p
H1 (PP201-8) 6Vp-p
H2 (PP201-9) 6Vp-p
HD (IC202-48) 3.2Vp-p
PP201-12 1.5Vp-p
SP1 (IC203-6) 3.2Vp-p
SP2 (IC203-5) 2.6Vp-p
STOP (20μsec./div.) GRAY SCALE
VD (IC202-1) 3.4Vp-p
SUB OUT (PP201-10) 17Vp-p
SPORTS MODE (10msec./div)
(2.8V)
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

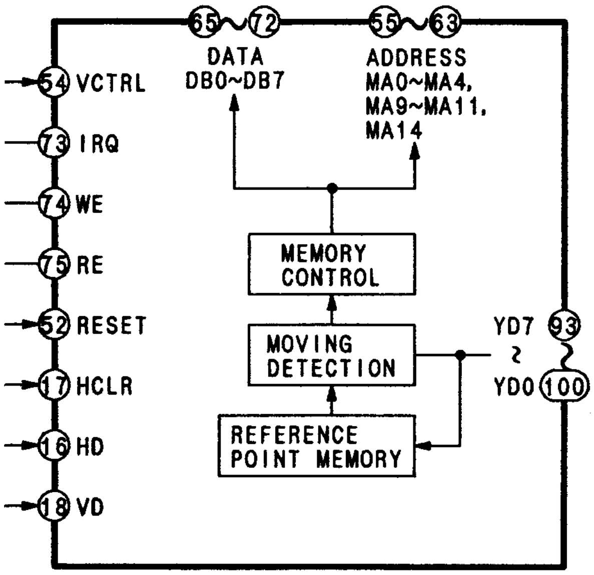
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

VIDEO SIGNAL

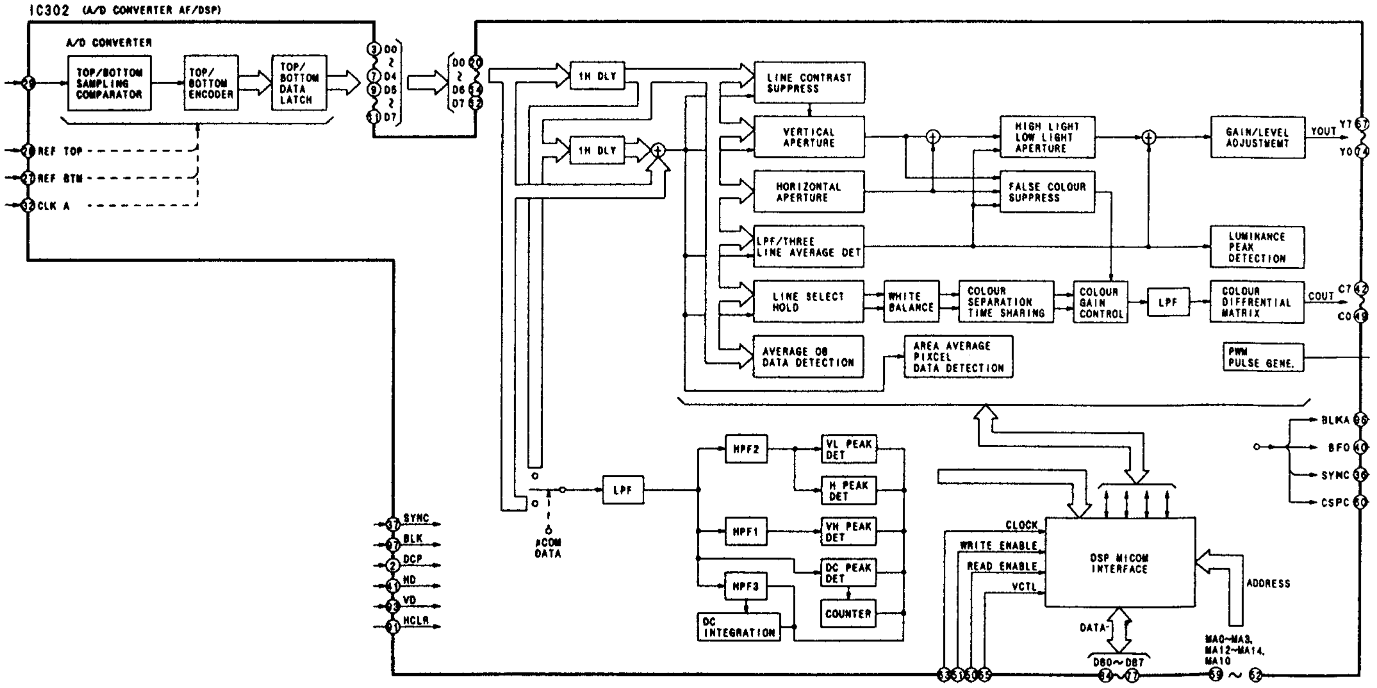

IC210 TC7S08F
IC209 TC7S08S
IC207 TC7SU04F
X201 VSX0650 (22.531250MHz)
IC201 VEFH43A
AN1358S
2SD2216
TC6186-3-W
MB87882
IC203 AN2018S
FL201 ELB3H018
Q204 2SB1462 (AMP)
IC202 MN5225 (SSG)
V. DEC
C. DEC
H. DEC
Q208 XP4601 (TRAP)
Q207 XP1401 (AMP)
Q206 2SC4627 (AMP)
IC204 AN2033FAP
HD (IC202-48) 3.2Vp-p
PP201-12 1.5Vp-p
SP1 (IC203-6) 3.2Vp-p
SP2 (IC203-5) 2.6Vp-p
STOP (20μsec./div.) GRAY SCALE
VD (IC202-1) 3.4Vp-p
SUB OUT (PP201-10) 17Vp-p
SPORTS MODE (10msec./div)
IC204-21 0.6Vp-p
IC204-19 0.5Vp-p
IC204-24 3.5Vp-p
IC204-25 3.5Vp-p
STOP (20μsec./div.) GRAY SCALE
PLL FREQ
TL202
CL200
CL201
CL202
CL203
CL204
CL205
CL206
(2.8V)
IS STOP MODE
6
7
8
9
10
11
12
13
14
15
16
17

IC BLOCK

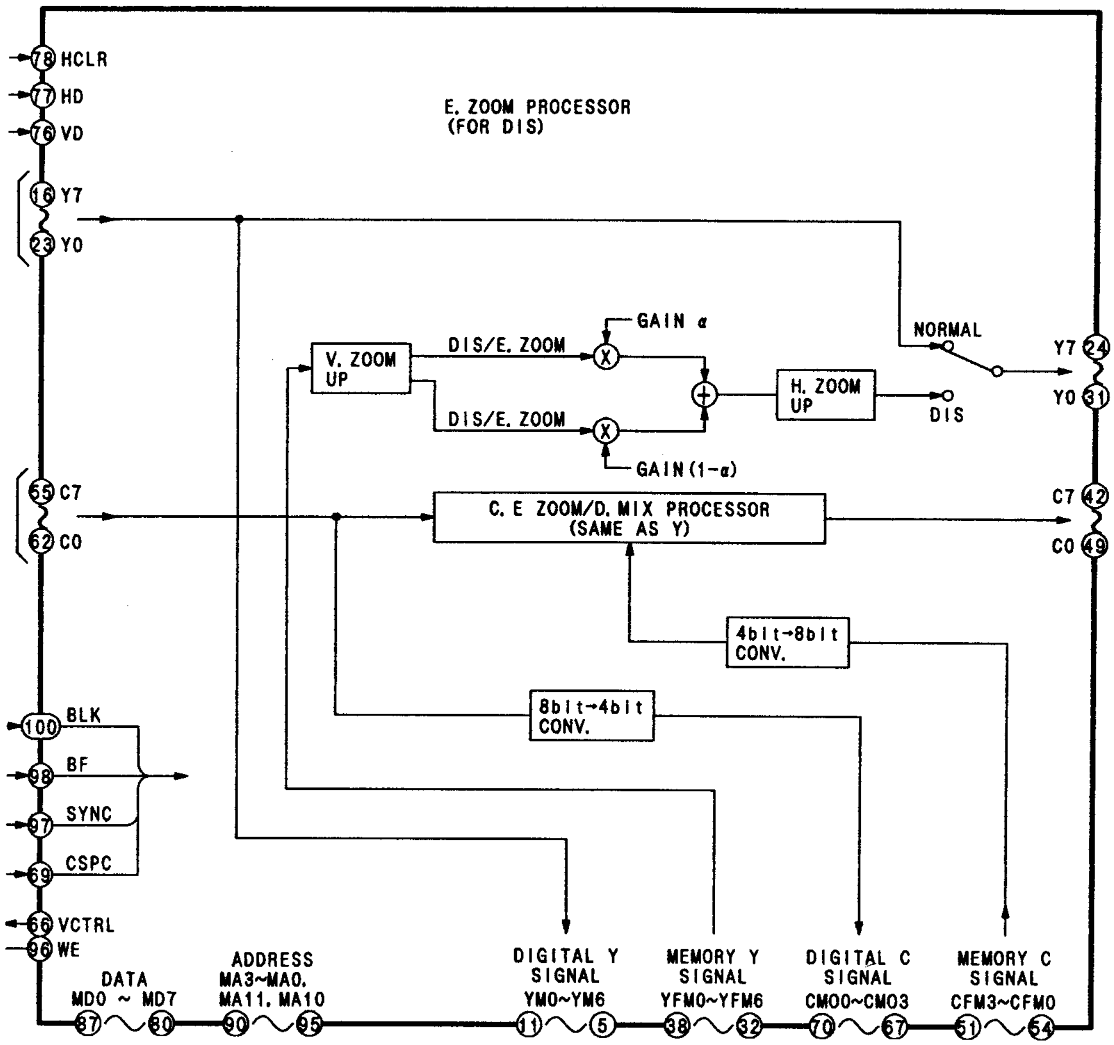
IC301 (L7A1038 or MN67333)
(LOCATION: B-20)


65~72
DATA
DB0~DB7
55~63
ADDRESS
MA0~MA4,
MA9~MA11,
MA14
54 VCTRL
73 IRQ
74 WE
75 RE
52 RESET
17 HCLR
16 HD
18 VD
MEMORY CONTROL
MOVING DETECTION
REFERENCE POINT MEMORY
YD7 93
YD0 100

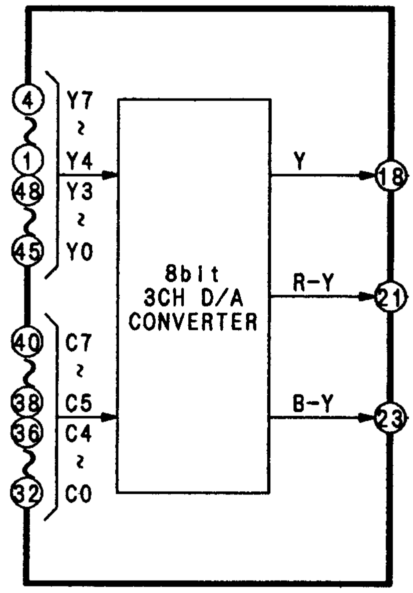
IC302 (MN67323)
(LOCATION: G-8)


IC302 (A/D CONVERTER AF/DSP)
A/D CONVERTER
TOP/BOTTOM SAMPLING COMPARATOR
TOP/ BOTTOM ENCODER
TOP/ BOTTOM DATA LATCH
REF TOP
REF BTM
CLK A
D0
D4
D5
D7
D0
D6
D7
1H DLY
1H DLY
LINE CONTRAST SUPPRESS
VERTICAL APERTURE
HORIZONTAL APERTURE
LPF/THREE LINE AVERAGE DET
LINE SELECT HOLD
AVERAGE OB DATA DETECTION
AREA AVERAGE PIXCEL DATA DETECTION
HIGH LIGHT LOW LIGHT APERTURE
FALSE COLOUR SUPPRESS
WHITE BALANCE
COLOUR SEPARATION TIME SHARING
COLOUR GAIN CONTROL
LPF
GAIN/LEVEL ADJUSTMEMT
YOUT
Y7 67
Y0 74
LUMINANCE PEAK DETECTION
COLOUR DIFFRENTIAL MATRIX
COUT
C7 42
C0 49
PWM PULSE GENE.
BLKA
BFO 40
SYNC
CSPC
LPF
μCOM DATA
HPF2
HPF1
HPF3
VL PEAK DET
H PEAK DET
VH PEAK DET
DC PEAK DET
COUNTER
DC INTEGRATION
SYNC
BLK
2 DCP
HD
VD
HCLR
CLOCK
WRITE ENABLE
READ ENABLE
VCTL
DSP MICOM INTERFACE
ADDRESS
DATA
DB0~DB7
MA0~MA3, MA12~MA14, MA10

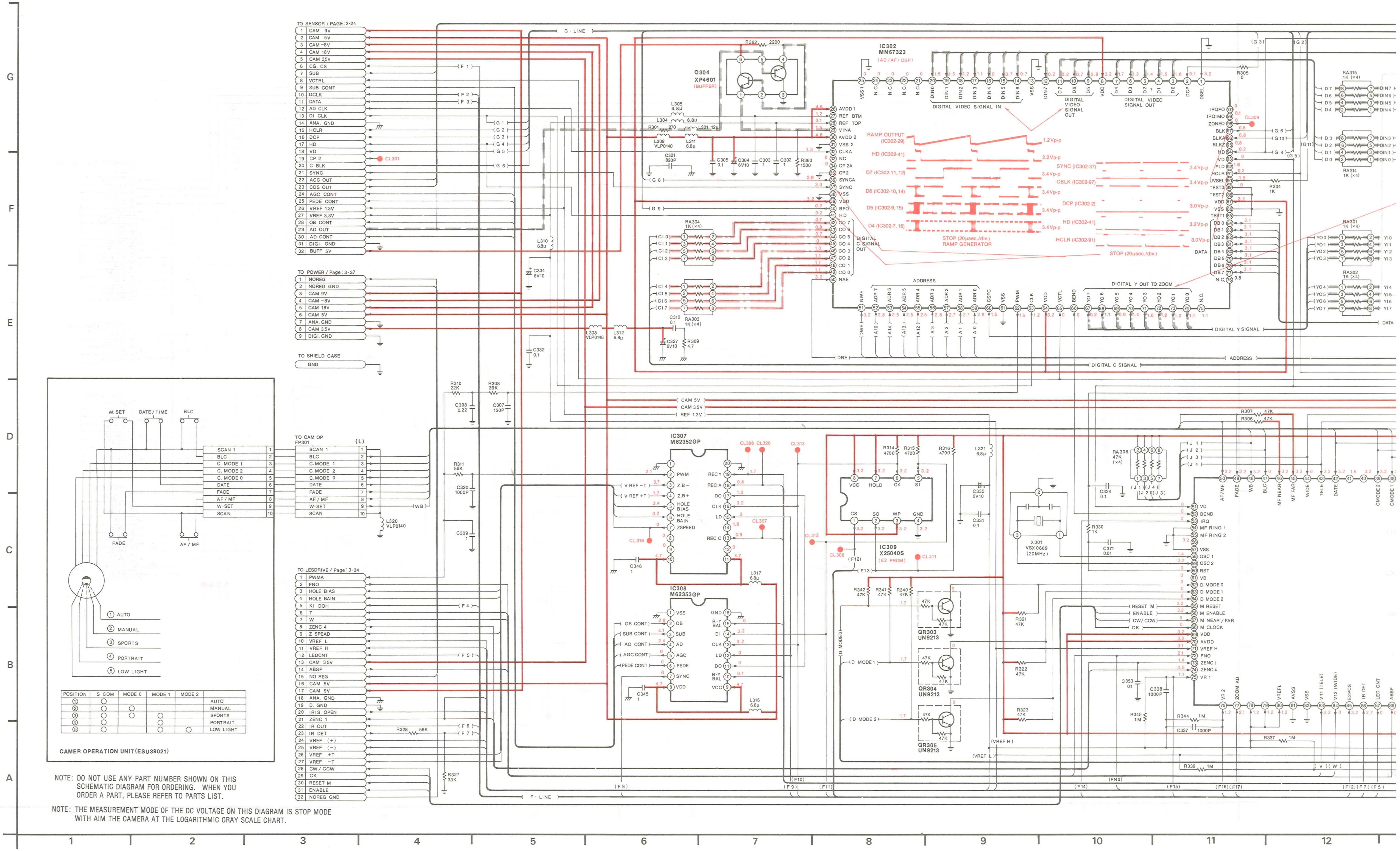
IC303 (MN67332 or L7A1193)
(LOCATION: E-14)


78 HCLR
77 HD
76 VD
E. ZOOM PROCESSOR (FOR DIS)
16 Y7
23 Y0
V. ZOOM UP
DIS/E. ZOOM
DIS/E. ZOOM
GAIN α
GAIN (1−α)
H. ZOOM UP
NORMAL
DIS
Y7 24
Y0 31
65 C7
62 C0
C. E ZOOM/D. MIX PROCESSOR (SAME AS Y)
C7 42
C0 49
4bit→8bit CONV.
8bit→4bit CONV.
100 BLK
98 BF
97 SYNC
69 CSPC
66 VCTRL
96 WE
DATA MD0 ~ MD7
87 ~ 80
ADDRESS MA3~MA0, MA11, MA10
90 ~ 95
DIGITAL Y SIGNAL YM0~YM6
11 ~ 5
MEMORY Y SIGNAL YFM0~YFM6
38 ~ 32
DIGITAL C SIGNAL CM00~CM03
70 ~ 67
MEMORY C SIGNAL CFM3~CFM0
51 ~ 54

IC315 (MN65703T)
(LOCATION: G-19)

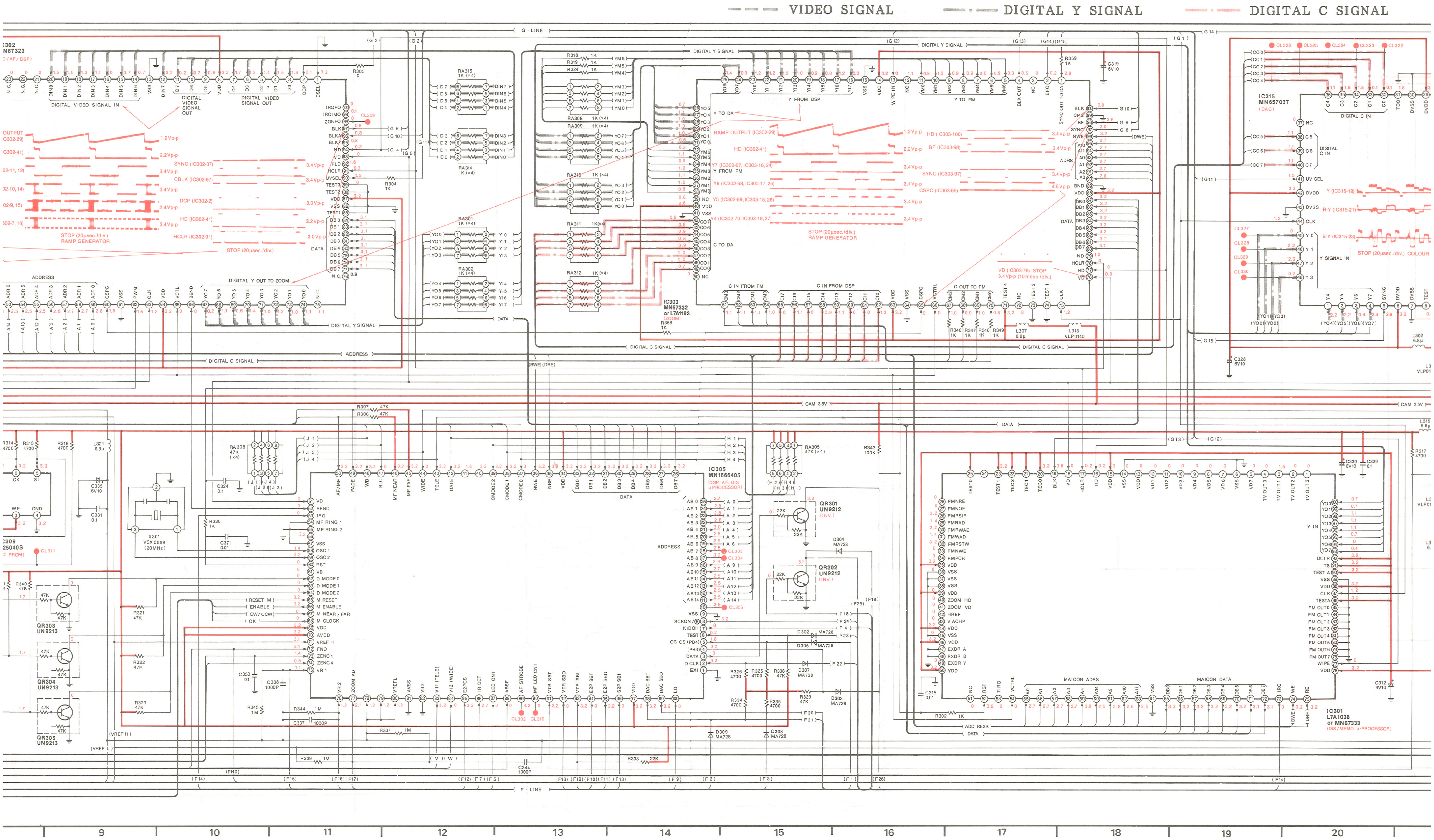

4 Y7
1 Y4
48 Y3
45 Y0
40 C7
38 C5
36 C4
32 C0
8bit 3CH D/A CONVERTER
Y 18
R−Y 21
B−Y 23

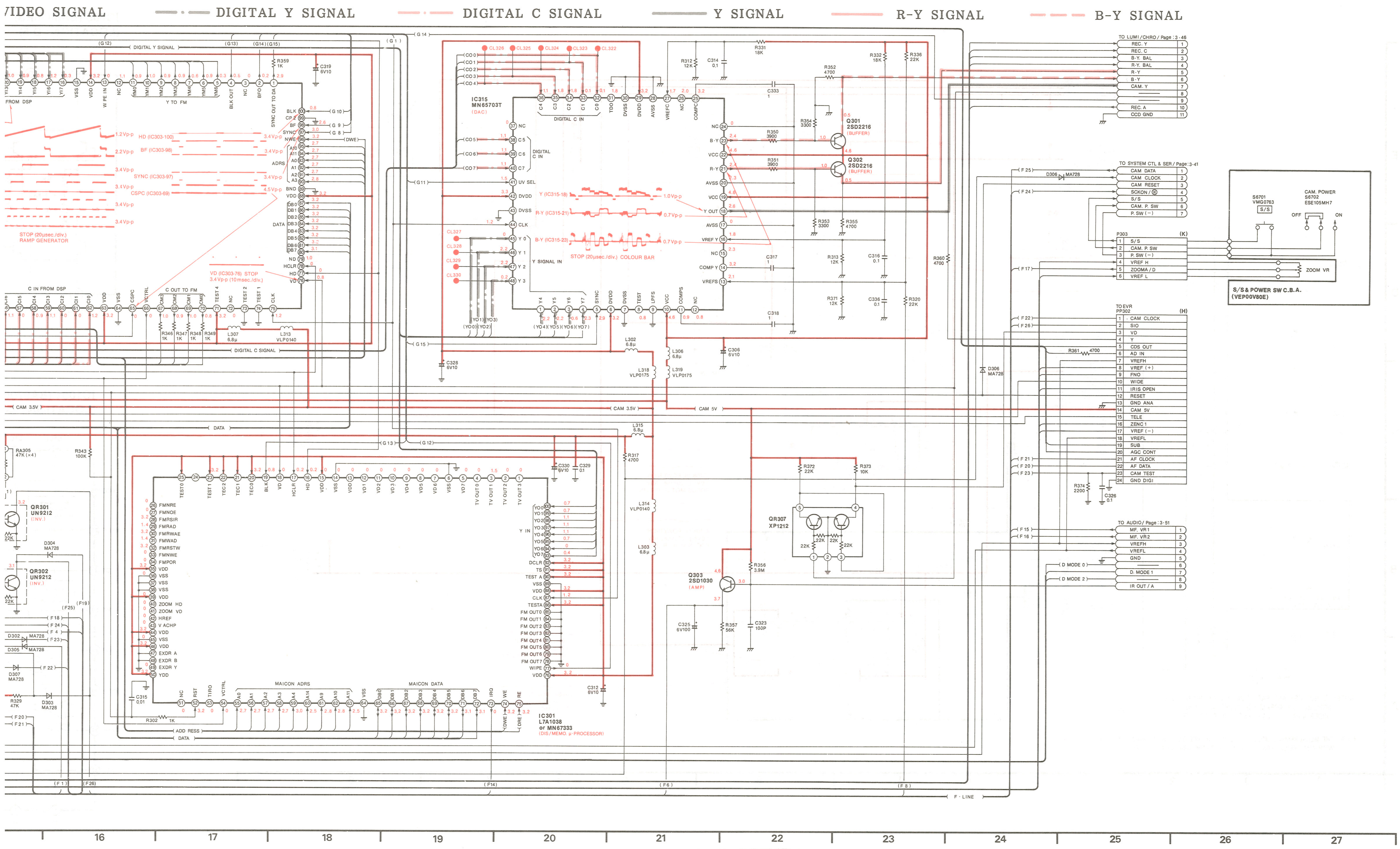
3-16. PROCESS SCHEMATIC DIAGRAM


TO SENSOR / PAGE: 3-24
TO POWER / Page: 3-37
TO SHIELD CASE
TO CAM OP FP301
TO LESDRIVE / Page: 3-34
Q304 XP4601 (BUFFER)
IC302 MN67323 (AD / AF / DSP)
IC307 M62352GP
IC308 M62353GP
IC309 X25040S (E2 PROM)
QR303 UN9213
QR304 UN9213
QR305 UN9213
X301 VSX 0669 (20MHz)
G - LINE
F - LINE
DIGITAL VIDEO SIGNAL IN
DIGITAL VIDEO SIGNAL OUT
DIGITAL C SIGNAL OUT
DIGITAL Y OUT TO ZOOM
DIGITAL Y SIGNAL
DIGITAL C SIGNAL
ADDRESS
DATA
RAMP OUTPUT (IC302-29)
HD (IC302-41)
D7 (IC302-11, 12)
D6 (IC302-10, 14)
D5 (IC302-9, 15)
D4 (IC302-7, 16)
STOP (20μsec./div.) RAMP GENERATOR
SYNC (IC302-37)
CBLK (IC302-97)
DCP (IC302-2)
HD (IC302-41)
HCLR (IC302-91)
STOP (20μsec./div.)
CAM 5V
CAM 3.5V
REF 1.3V
W. SET
DATE / TIME
BLC
FADE
AF / MF
① AUTO
② MANUAL
③ SPORTS
④ PORTRAIT
⑤ LOW LIGHT
POSITION
S COM
MODE 0
MODE 1
MODE 2
AUTO
MANUAL
SPORTS
PORTRAIT
LOW LIGHT
CAMER OPERATION UNIT (ESU39021)
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12

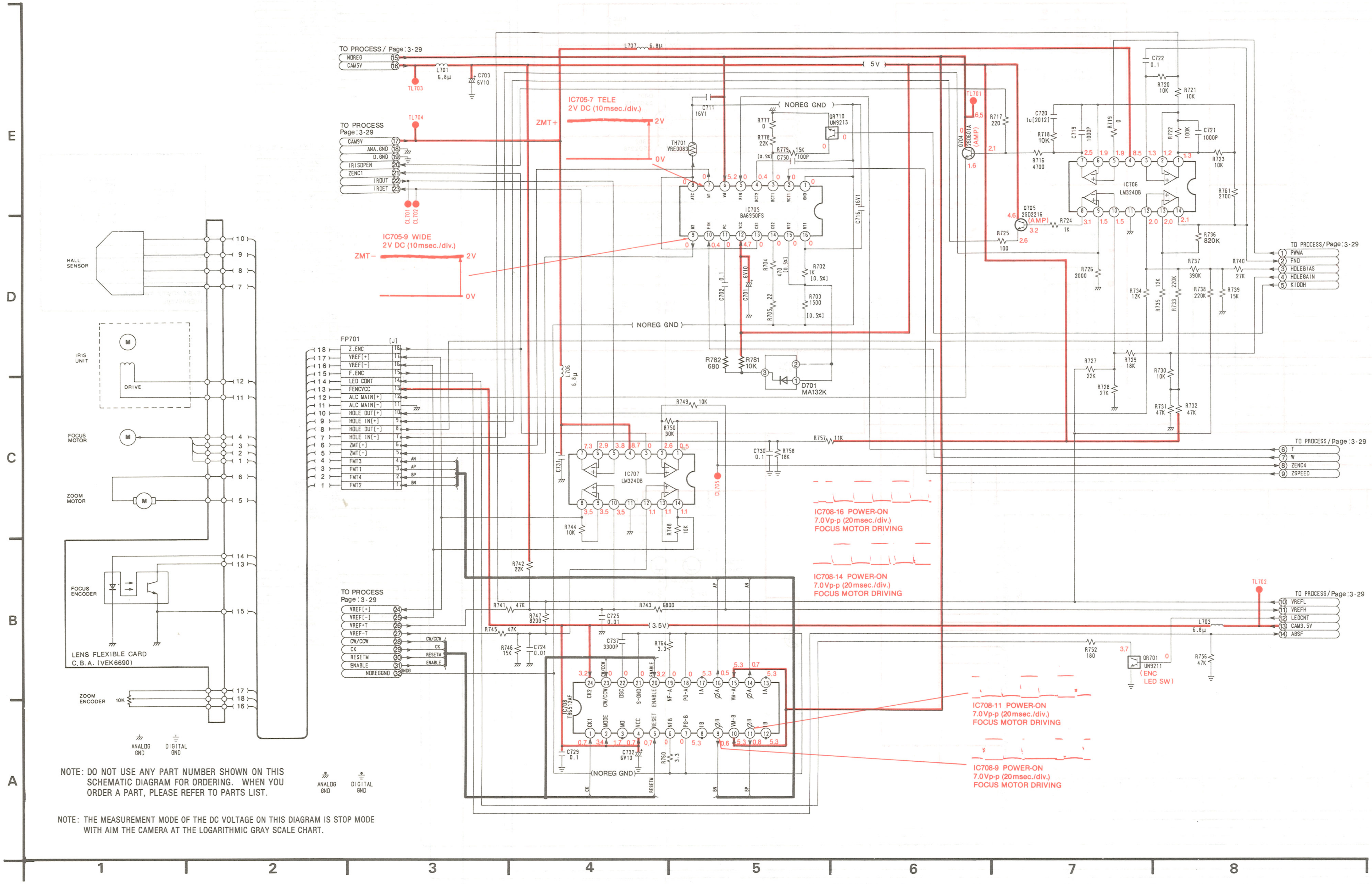
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.


VIDEO SIGNAL
DIGITAL Y SIGNAL
DIGITAL C SIGNAL
G - LINE
F - LINE
IC302
MN67323
(D/AF/DSP)
DIGITAL VIDEO SIGNAL IN
DIGITAL VIDEO SIGNAL OUT
OUTPUT (IC302-29)
STOP (20μsec./div.)
RAMP GENERATOR
SYNC (IC302-37)
CBLK (IC302-97)
DCP (IC302-2)
HD (IC302-41)
HCLR (IC302-91)
ADDRESS
DATA
DIGITAL Y OUT TO ZOOM
DIGITAL Y SIGNAL
DIGITAL C SIGNAL
RA315 1K (×4)
RA314 1K (×4)
RA301 1K (×4)
RA302 1K (×4)
RA308 1K (×4)
RA309 1K (×4)
RA310 1K (×4)
RA311 1K (×4)
RA312 1K (×4)
Y FROM DSP
Y TO FM
Y TO DA
Y FROM FM
C TO DA
C IN FROM FM
C IN FROM DSP
C OUT TO FM
IC303
MN67332
or L7A1193
(ZOOM)
RAMP OUTPUT (IC302-29)
HD (IC303-100)
BF (IC303-98)
SYNC (IC303-97)
CSPC (IC303-69)
STOP (20μsec./div.)
RAMP GENERATOR
VD (IC303-76) STOP
3.4Vp-p (10msec./div.)
IC315
MN65703T
(DAC)
DIGITAL C IN
Y SIGNAL IN
STOP (20μsec./div.) COLOUR
Y (IC315-18)
R-Y (IC315-21)
B-Y (IC315-23)
CAM 3.5V
DATA
IC309
25040S
(E2 PROM)
QR303 UN9213
QR304 UN9213
QR305 UN9213
X301
VSX 0869
(20MHz)
IC305
MN1866405
(DSP. AF. DIS μ-PROCESSOR)
QR301 UN9212 (INV.)
QR302 UN9212 (INV.)
ADDRESS
MAICON ADRS
MAICON DATA
IC301
L7A1038
or MN67333
(DIS/MEMO. μ-PROCESSOR)
ADD RESS
DATA
9
10
11
12
13
14
15
16
17
18
19
20


/IDEO SIGNAL
DIGITAL Y SIGNAL
DIGITAL C SIGNAL
Y SIGNAL
R-Y SIGNAL
B-Y SIGNAL
FROM DSP
Y TO FM
DIGITAL Y SIGNAL
C IN FROM DSP
C OUT TO FM
DIGITAL C SIGNAL
STOP (20µsec./div.)
RAMP GENERATOR
VD (IC303-76) STOP
3.4 Vp-p (10msec./div.)
IC315
MN65703T
(DAC)
DIGITAL C IN
Y SIGNAL IN
Y (IC315-18)
R-Y (IC315-21)
B-Y (IC315-23)
STOP (20µsec./div.) COLOUR BAR
Q301
2SD2216
(BUFFER)
Q302
2SD2216
(BUFFER)
TO LUMI / CHRO / Page : 3-46
REC. Y
REC. C
B-Y. BAL
R-Y. BAL
R-Y
B-Y
CAM. Y
REC. A
CCD GND
TO SYSTEM CTL & SER / Page : 3-41
CAM DATA
CAM CLOCK
CAM RESET
SCKON / Ⓗ
S/S
CAM. P. SW
P. SW (−)
P303
S/S
CAM. P. SW
P. SW (−)
VREF H
ZOOMA / D
VREF L
S6701
VMG0763
CAM. POWER
S6702
ESE105MH7
OFF
ON
ZOOM VR
S/S & POWER SW C.B.A.
(VEP00V80E)
TO EVR
PP302
CAM CLOCK
SIO
VD
Y
CDS OUT
AD IN
VREFH
VREF (+)
FNO
WIDE
IRIS OPEN
RESET
GND ANA
CAM 5V
TELE
ZENC 1
VREF (−)
VREFL
SUB
AGC CONT
AF CLOCK
AF DATA
CAM TEST
GND DIGI
TO AUDIO / Page : 3-51
MF. VR1
MF. VR2
VREFH
VREFL
GND
D. MODE 1
IR OUT / A
CAM 3.5V
CAM 5V
DATA
QR307
XP1212
Q303
2SD1030
(AMP)
QR301
UN9212
(INV.)
QR302
UN9212
(INV.)
MAICON ADRS
MAICON DATA
IC301
L7A1038
or MN67333
(DIS / MEMO. µ-PROCESSOR)
ADD RESS
DATA
F - LINE
16
17
18
19
20
21
22
23
24
25
26
27

3-17. LENS DRIVE SCHEMATIC DIAGRAM


TO PROCESS / Page: 3-29
NOREG
CAM5V
L701 6.8μ
C703 6V10
TL703
TL704
TO PROCESS Page: 3-29
CAM5V
ANA.GND
D.GND
IRISOPEN
ZENC1
IROUT
IRDET
CL701
CL702
L707 6.8μ
5V
IC705-7 TELE
2V DC (10msec./div.)
ZMT+
2V
0V
IC705-9 WIDE
2V DC (10msec./div.)
ZMT−
NOREG GND
IC705 BA6950FS
TH701
QR710 UN9213
IC706 LM324DB
Q704 2SD601A (AMP)
Q705 2SD2216 (AMP)
TL701
TO PROCESS / Page: 3-29
PWMA
FND
HOLEBIAS
HOLEGAIN
KIDOH
HALL SENSOR
IRIS UNIT
DRIVE
FOCUS MOTOR
ZOOM MOTOR
FOCUS ENCODER
LENS FLEXIBLE CARD C.B.A. (VEK6690)
ZOOM ENCODER
FP701
Z.ENC
VREF(+)
VREF(−)
F.ENC
LED CONT
FENCVCC
ALC MAIN(+)
ALC MAIN(−)
HOLE OUT(+)
HOLE IN(+)
HOLE OUT(−)
HOLE IN(−)
ZMT(+)
ZMT(−)
FMT3
FMT1
FMT4
FMT2
L706 6.8μ
R782 680
R781 10K
D701 MA132K
IC707 LM324DB
CL705
TO PROCESS / Page: 3-29
T
W
ZENC4
ZSPEED
IC708-16 POWER-ON
7.0Vp-p (20msec./div.)
FOCUS MOTOR DRIVING
IC708-14 POWER-ON
7.0Vp-p (20msec./div.)
FOCUS MOTOR DRIVING
TO PROCESS Page: 3-29
VREF(+)
VREF(−)
VREF+T
VREF−T
CW/CCW
CK
RESETM
ENABLE
NOREGGND
(3.5V)
IC708 TD6512AF
(NOREG GND)
TL702
TO PROCESS / Page: 3-29
VREFL
VREFH
LEDCNT
CAM3.5V
ABSF
L703 6.8μ
QR701 UN9211 (ENC LED SW)
IC708-11 POWER-ON
7.0Vp-p (20msec./div.)
FOCUS MOTOR DRIVING
IC708-9 POWER-ON
7.0Vp-p (20msec./div.)
FOCUS MOTOR DRIVING
ANALOG GND
DIGITAL GND
A
B
C
D
E
1
2
3
4
5
6
7
8

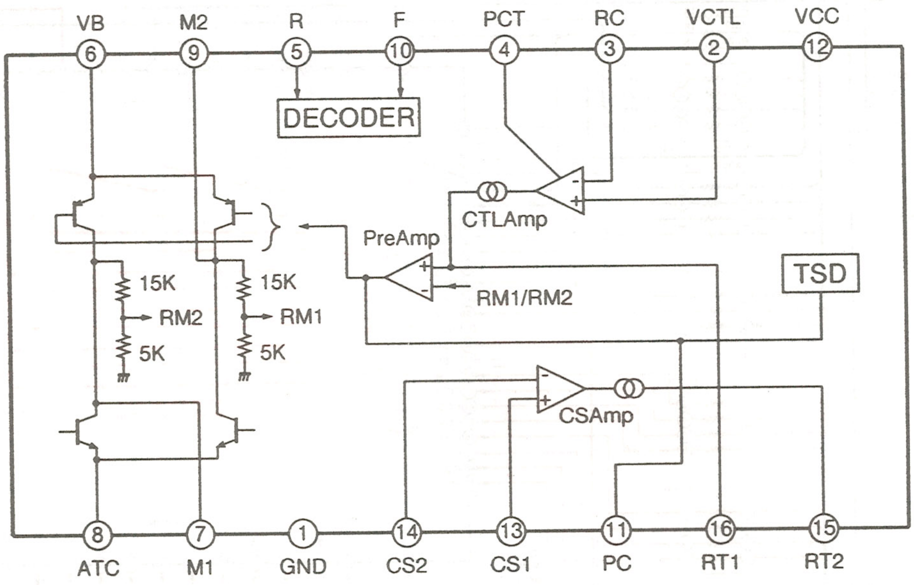
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

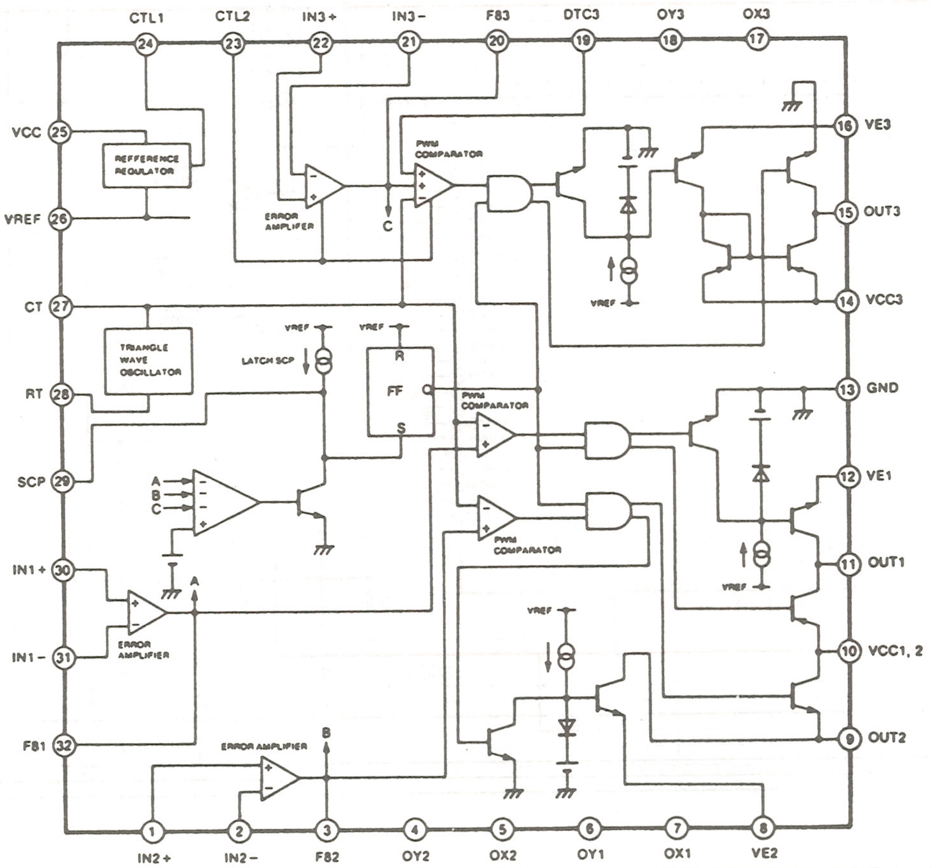
Back Page:
PROCESS Section

IC BLOCK

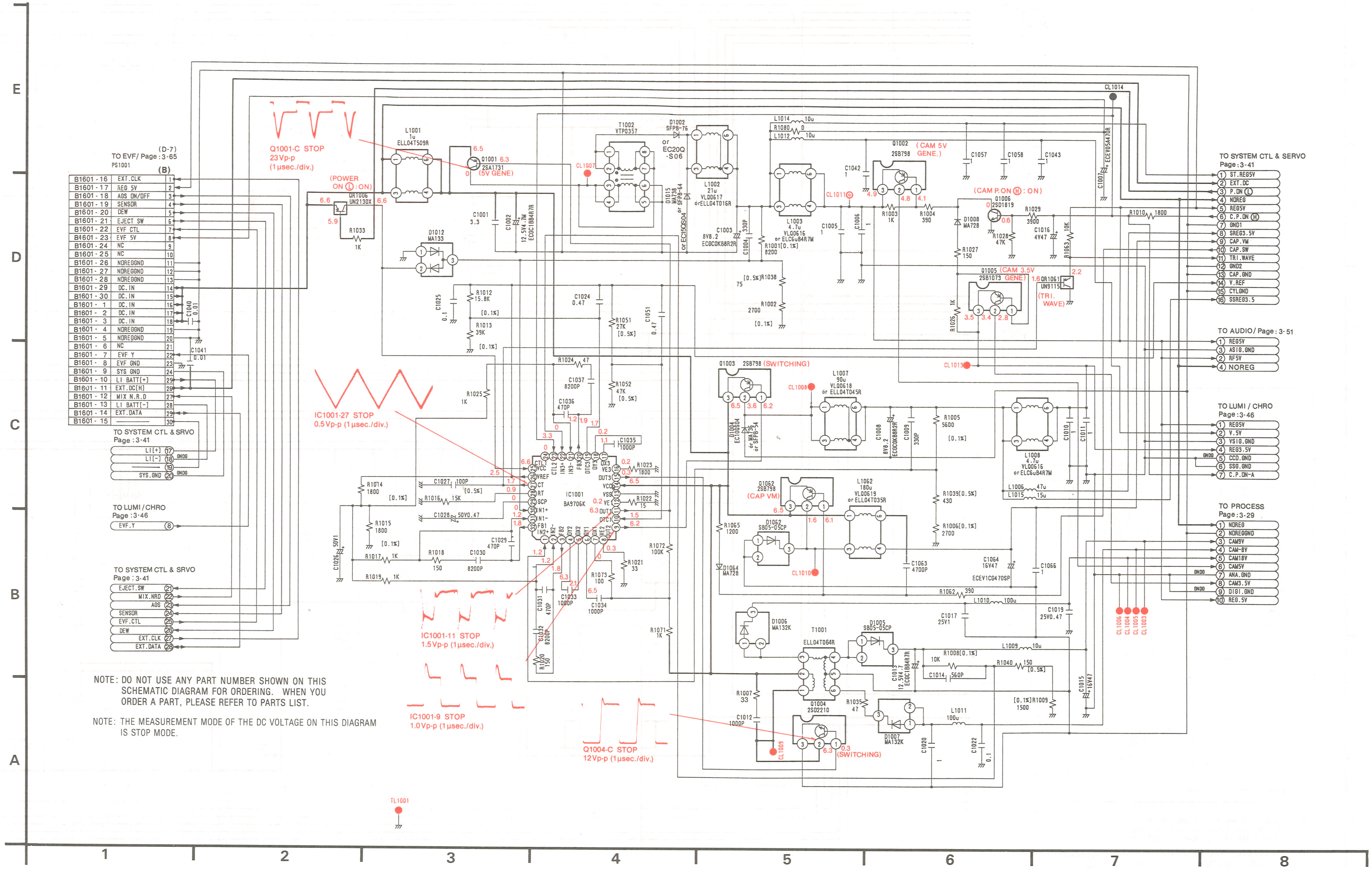
IC705 (BA6950FS)
(LOCATION: D-5)


VB
M2
R
F
PCT
RC
VCTL
VCC
6
9
5
10
4
3
2
12
DECODER
CTLAmp
PreAmp
TSD
15K
RM2
5K
15K
RM1
5K
RM1/RM2
CSAmp
8
7
1
14
13
11
16
15
ATC
M1
GND
CS2
CS1
PC
RT1
RT2

IC1001 (BA9706K)
(LOCATION: C-4)


CTL1
CTL2
IN3+
IN3−
F83
DTC3
OY3
OX3
24
23
22
21
20
19
18
17
VCC 25
VREF 26
CT 27
RT 28
SCP 29
IN1+ 30
IN1− 31
F81 32
REFFERENCE REGULATOR
ERROR AMPLIFER
C
PWM COMPARATOR
VREF
TRIANGLE WAVE OSCILLATOR
LATCH SCP
R
FF
S
Q
PWM COMPARATOR
A
B
C
A
ERROR AMPLIFIER
PWM COMPARATOR
ERROR AMPLIFIER
B
16 VE3
15 OUT3
14 VCC3
13 GND
12 VE1
11 OUT1
10 VCC1, 2
9 OUT2
1
2
3
4
5
6
7
8
IN2+
IN2−
F82
OY2
OX2
OY1
OX1
VE2

3-18. POWER SCHEMATIC DIAGRAM


E
D
C
B
A
1
2
3
4
5
6
7
8
(D-7)
TO EVF/ Page : 3-65
PS1001
(B)
B1601 - 16 EXT.CLK 1
B1601 - 17 REG 5V 2
B1601 - 18 AGS ON/OFF 3
B1601 - 19 SENSOR 4
B1601 - 20 DEW 5
B1601 - 21 EJECT SW 6
B1601 - 22 EVF CTL 7
B1601 - 23 EVF 5V 8
B1601 - 24 NC 9
B1601 - 25 NC 10
B1601 - 26 NOREGGND 11
B1601 - 27 NOREGGND 12
B1601 - 28 NOREGGND 13
B1601 - 29 DC.IN 14
B1601 - 30 DC.IN 15
B1601 - 1 DC.IN 16
B1601 - 2 DC.IN 17
B1601 - 3 DC.IN 18
B1601 - 4 NOREGGND 19
B1601 - 5 NOREGGND 20
B1601 - 6 NC 21
B1601 - 7 EVF Y 22
B1601 - 8 EVF GND 23
B1601 - 9 SYS GND 24
B1601 - 10 LI BATT[+] 25
B1601 - 11 EXT.DC[H] 26
B1601 - 12 MIX N.R.D 27
B1601 - 13 LI BATT[-] 28
B1601 - 14 EXT.DATA 29
B1601 - 15 30
C1040 0.01
C1041 0.01
TO SYSTEM CTL & SRVO
Page : 3-41
LI[+] ⑰
LI[-] ⑱ GNDG
⑲
SYS.GND ⑳ GNDG
TO LUMI / CHRO
Page : 3-46
EVF.Y ⑧
TO SYSTEM CTL & SRVO
Page : 3-41
EJECT.SW ㉑
MIX.NRD ㉒
AGS ㉓
SENSOR ㉔
EVF.CTL ㉕
DEW ㉖
EXT.CLK ㉗
EXT.DATA ㉘
Q1001-C STOP
23Vp-p (1μsec./div.)
(POWER ON Ⓛ : ON)
QR1006 UN2130X
R1033 1K
L1001 1u ELL04T509R
Q1001 2SA1731 (5V GENE)
C1001 3.3
C1002 12.5V4.7M ECOC1B84R7R
D1012 MA133
T1002 VTP0357
D1002 SFPB-76 or EC20Q-S06
D1015 MA738 or SFPB-54 or EC15QS04
L1002 21u VLQ0617 or ELL04T016R
C1003 8V8.2 ECOCOKB8R2R
C1004 330P
CL1007
CL1011
L1014 10u
R1080 0
L1012 10u
Q1002 2SB798 (CAM 5V GENE.)
C1042 1
L1003 4.7u VLQ0616 or ELC6uB4R7M
R1001 [0.1%] 8200
C1005 1
C1006
R1003 1K
R1004 390
C1057 1
C1058 1
C1043 1
C1007 ECEV0SA470R
CL1014
(CAM P.ON Ⓗ : ON)
Q1006 2SD1819
D1008 MA728
R1029 3900
R1028 47K
C1016 4V47
R1063 10K
R1027 150
R1010 1800
Q1005 (CAM 3.5V) 2SB1073 GENE)
QR1061 UN9115 (TRI. WAVE)
R1026 1K
C1025 0.1
R1012 15.8K [0.1%]
R1013 39K [0.1%]
C1024 0.47
R1051 27K [0.5%]
C1051 0.47
[0.5%] R1038 75
R1002 2700 [0.1%]
Q1003 2SB798 (SWITCHING)
CL1013
CL1008
L1007 90u VLQ0618 or ELL04T045R
D1004 EC15QS04 or MA738 or SFPB-54
C1008 8V8.2 ECOCOKB8R2R
C1009 330P
R1005 5600 [0.1%]
L1008 4.7u VLQ0616 or ELC6uB4R7M
L1006 47u
L1015 15u
C1010
C1011
IC1001-27 STOP
0.5Vp-p (1μsec./div.)
R1025 1K
R1024 47
C1037 8200P
C1036 470P
R1052 47K [0.5%]
C1035 1000P
R1023 1800
R1022 15
IC1001 BA9706K
R1014 1800
C1027 100P
R1016 15K [0.5%]
R1015 1800 [0.1%]
C1028 50V0.47
C1029 470P
C1026 50V1
R1017 1K
R1018 150
C1030 8200P
R1019 1K
C1031 470P
C1032 8200P
C1033 1000P
C1034 1000P
R1073 100
R1021 33
R1072 100K
R1020 150
R1071 1K
Q1062 2SB798 (CAP VM)
L1062 180u VLQ0619 or ELL04T035R
R1039 [0.5%] 430
R1006 [0.1%] 2700
R1065 1200
D1062 SB05-05CP
D1064 MA728
CL1010
C1063 4700P
C1064 16V47 ECEV1C0470SP
C1066 1
R1062 390
L1010 100u
C1019 25V0.47
C1017 25V1
D1006 MA132K
T1001 ELL04T064R
D1005 SB05-05CP
R1008 [0.1%] 10K
C1013 12.5V4.7 ECOC1B84R7R
C1014 560P
R1040 150 [0.5%]
L1009 10u
C1015 16V47
CL1006
CL1004
CL1005
CL1003
IC1001-11 STOP
1.5Vp-p (1μsec./div.)
IC1001-9 STOP
1.0Vp-p (1μsec./div.)
R1007 33
C1012 1000P
Q1004 2SD2210
R1035 47
D1007 MA132K
L1011 100u
[0.1%] R1009 1500
C1020
C1022 0.1
CL1009
Q1004-C STOP
12Vp-p (1μsec./div.)
(SWITCHING)
TL1001
TO SYSTEM CTL & SERVO
Page : 3-41
① ST.REG5V
② EXT.DC
③ P.ON Ⓛ
④ NOREG
⑤ REG5V
⑥ C.P.ON Ⓗ
⑦ GND1
⑧ SREG3.5V
⑨ CAP.VM
⑩ CAP.SW
⑪ TRI.WAVE
⑫ GND2
⑬ CAP.GND
⑭ V.REF
⑮ CYLGND
⑯ SSREG3.5
TO AUDIO/ Page : 3-51
① REG5V
③ ASIG.GND
② RF5V
④ NOREG
TO LUMI / CHRO
Page : 3-46
① REG5V
② V.5V
③ VSIG.GND
④ REG3.5V
GNDG
⑤ CCD.GND
⑥ SSG.GND
⑦ C.P.ON-A
TO PROCESS
Page : 3-29
① NOREG
② NOREGGND
③ CAM9V
④ CAM-8V
⑤ CAM18V
⑥ CAM5V
GNDG
⑦ ANA.GND
⑧ CAM3.5V
GNDG
⑨ DIGI.GND
⑩ REG.5V

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

SYSTEM CONTROL & SERVO ICs DC VOLTAGE CHART (SP MODE)

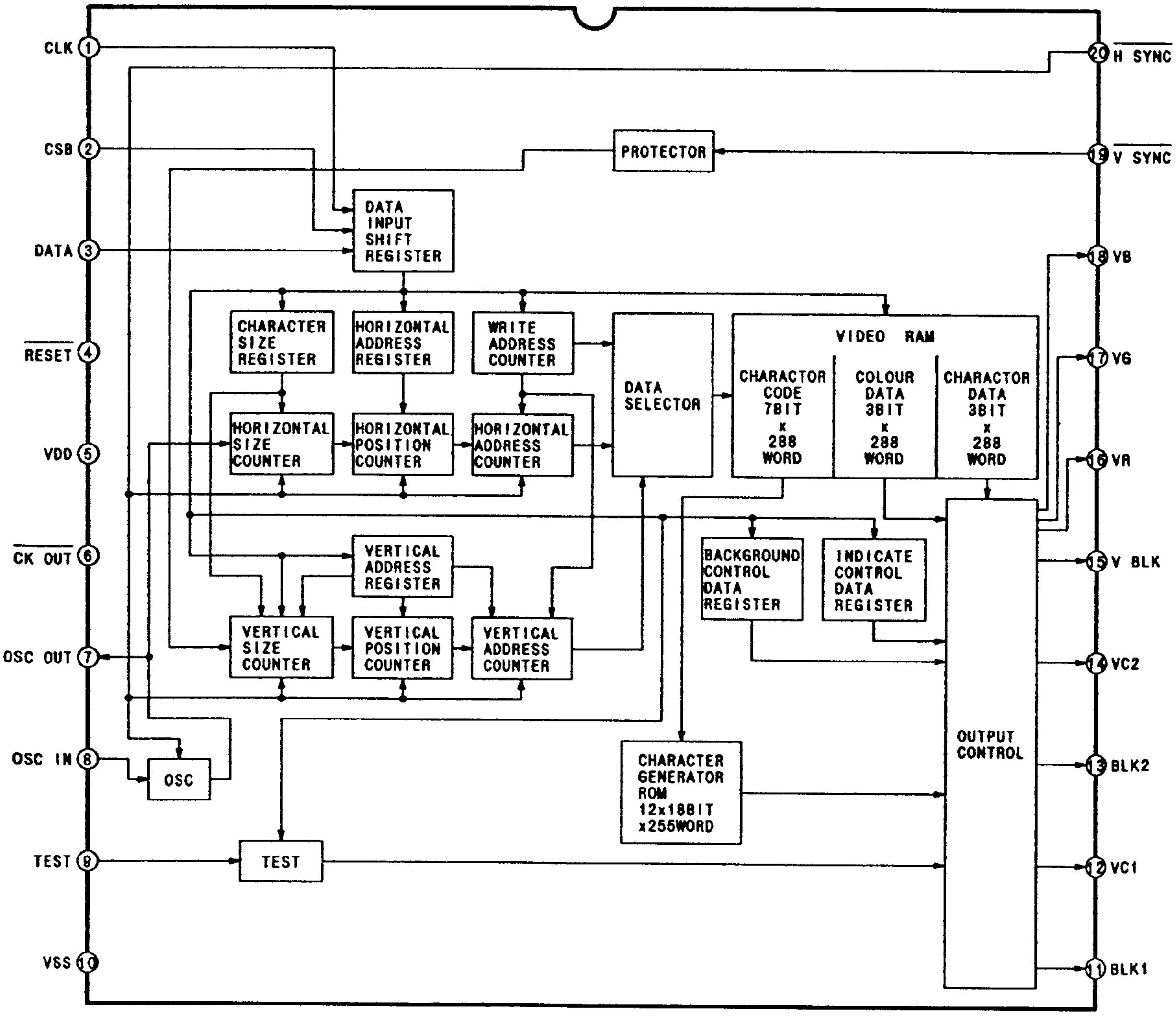
REF. NO.	IC6001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	3.5	3.6	0	3.6	3.6	3.5	3.6	3.6	0	3.6	0	0	0	3.6	3.6	0	0	0	0
PLAY	0	0	3.6	0	0	3.6	3.6	0	0	3.6	0	0	0	0	3.6	1.8	0	0	0	0
F.F	0	3.5	3.6	0	3.3	3.3	3.6	3.6	0	0	3.6	0	0	0	3.6	1.8	0	0	0	0.2
REF. NO.	IC6001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0	0	1.8	2.0	2.0	0	0	0	1.8	0	0	2.0	3.0	3.6	2.3	2.5	3.6	1.7	0	0
PLAY	0	0	1.8	0	3.6	0	0	0.2	0.8	0	0.4	0	3.4	3.6	2.7	3.6	3.6	1.7	1.7	0
F.F	0	0	0.1	0	3.6	0	0	0.3	1.8	0	0	0.1	3.4	3.6	2.7	2.4	3.6	1.7	1.7	0
REF. NO.	IC6001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	3.6	0	0	0	0	0.7	3.6	0	0	0	0	2.9	2.8	2.8	2.0	1.7	3.2	1.6	3.6	0.9
PLAY	3.6	0	0	0	0	0	0	0.2	0.1	1.8	1.8	3.0	3.0	2.8	1.6	1.6	3.2	0	3.6	0
F.F	3.6	0	0	0	0	0.9	3.6	0	0	3.6	0	3.0	3.0	2.9	2.8	3.3	3.2	0	3.6	0.8
REF. NO.	IC6001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	3.6	0	3.6	0.3	0	3.0	3.0	3.6	0.2	0	0	0	3.2	1.1	1.4	0	0	0	1.7	1.6
PLAY	3.6	0	1.3	0	0	3.3	3.3	3.6	0.2	0	0	0	0	1.1	1.6	1.6	0.1	0	1.8	1.8
F.F	3.6	0	1.8	0	0	3.2	3.2	3.6	0.2	0	0	0	3.2	1.1	1.6	1.6	0.1	0	1.8	1.7
REF. NO.	IC6001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
STOP	1.6	1.9	3.6	0	0	0	1.6	1.7	0	1.8	0	3.6	0	3.4	3.6	0	3.3	3.0	2.3	0
PLAY	1.7	1.8	3.6	0	0	0	1.8	1.8	0	1.5	1.8	3.6	1.5	1.9	3.6	1.5	3.3	3.0	2.3	2.8
F.F	1.7	1.8	3.6	0	0	0	1.7	1.8	0	0.4	1.8	3.6	1.5	1.9	3.6	0.9	3.3	3.0	2.3	0
REF. NO.	IC6001																			
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
STOP	0	0	0	3.2	0	0	0	0	3.6	0	0	3.6	3.6	3.6	3.6	3.6	3.6	3.6	0	0
PLAY	0	0	0	1.6	1.6	0	0	0	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	0
F.F	0	0	0	1.6	1.6	0	0	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	0
REF. NO.	IC6001																			
MODE	121	122	123	124	125	126	127	128												
STOP	0.1	0	3.6	3.6	3.6	0	0	0												
PLAY	0.1	0	3.6	3.6	3.6	0	0	0												
F.F	0.1	0	3.5	3.6	3.6	0	0	0												
REF. NO.	IC6002																			
MODE	1	2	3	4	5	6	7	8												
STOP	0	0	0.3	0	1.8	3.3	3.2	3.4												
PLAY	0	0.7	0	0	1.8	0	1.6	3.4												
F.F	0	0	0.3	0	1.8	0	0	3.4												
REF. NO.	IC6003																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	3.2	3.0	1.6	3.5	0	0	1.3	1.3	0	0	0	0	0	0	0	0	0	0	3.3	3.0
PLAY	3.2	3.0	1.6	3.5	3.3	0	1.3	1.3	0	1.5	0	0	0	0	0	0	0	0	3.3	3.0
F.F	3.2	3.2	3.2	3.5	3.3	0	1.3	1.3	0	0	0	0	0	0	0	0	0	0	3.3	3.0
REF. NO.	IC6004																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	0	3.2	3.3	3.0	1.3	0	0	3.3	3.2	3.3	3.2	0	0.2	3.3						
PLAY	3.0	0	0.4	0	0	0	0	3.3	3.2	3.3	1.6	0	0	3.3						
F.F	3.0	3.2	3.1	0	1.3	0	0	3.3	3.2	3.3	3.2	0	0.2	3.3						
REF. NO.	IC6005										IC6006									
MODE	1	2	3	4	5	6	7	8			1	2	3	4	5	6	7	8		
STOP	0	5.3	4.7	0	0	3.0	2.6	0			0	0.5	0.5	0	1.6	2.7	0	3.3		
PLAY	0	5.3	4.7	0	0	3.0	0	0			1.7	0.5	0.5	0	1.6	1.3	1.7	3.3		
F.F	0	5.1	4.7	0	0	0	0	0			1.6	0.5	0.5	0	1.6	0.8	1.6	3.3		
REF. NO.	IC6007										IC6008									
MODE	1	2	3								1	2	3	4	5					
STOP	0	5.3	3.6								0	0	0	3.6	3.6					
PLAY	0	5.3	3.6								0	0	0	3.6	3.6					
F.F	0	5.2	3.6								0	0	0	3.6	3.6					
REF. NO.	IC6011																			
MODE	1	2	3	4	5															
STOP	3.2	3.3	0	0	3.3															
PLAY	3.2	3.3	0	0	3.3															
F.F	3.2	3.3	0	0	3.3															

SYSTEM CONTROL & SERVO TRs DC VOLTAGE CHART (SP MODE)

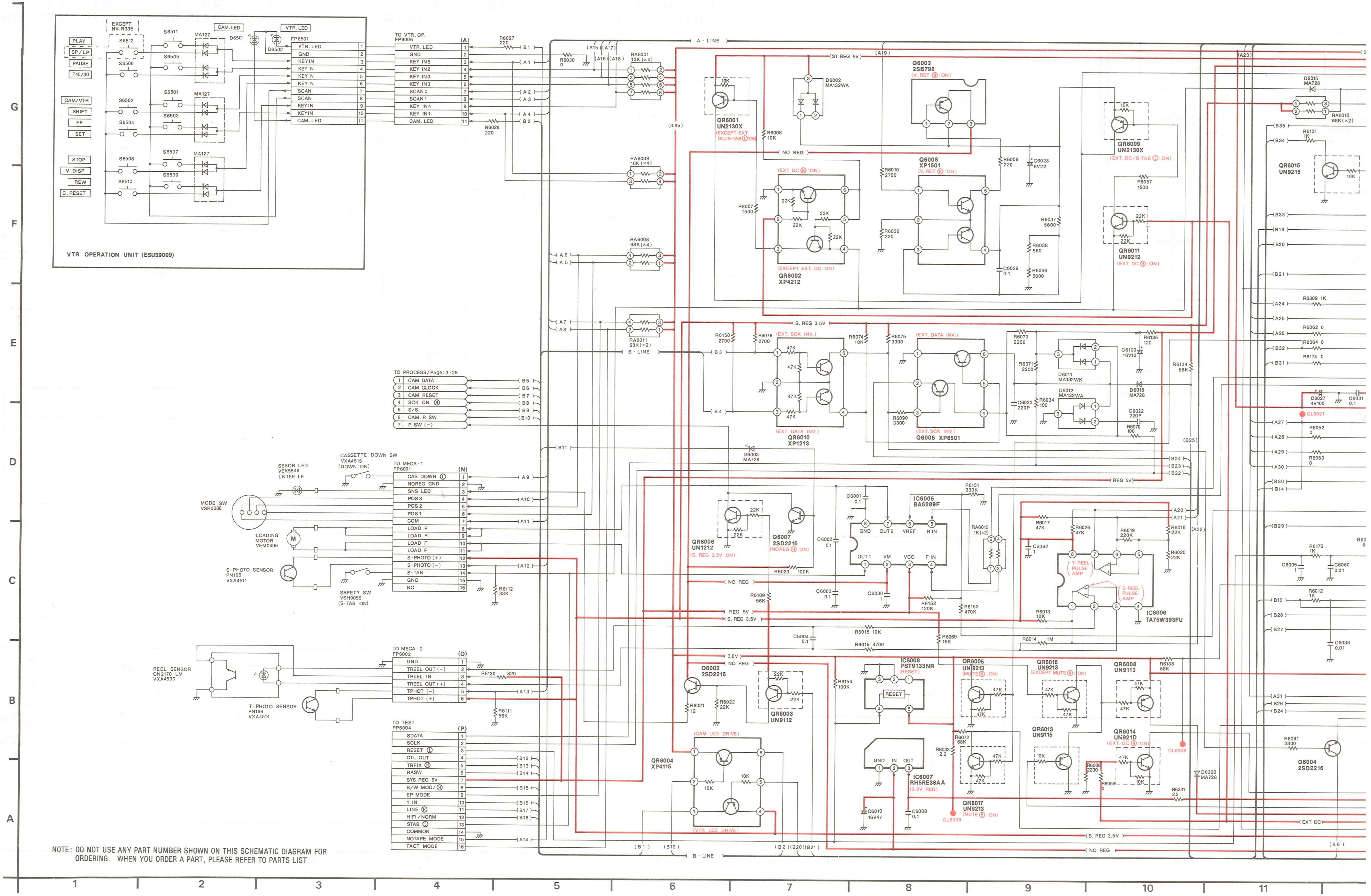
REF. NO.	Q6002			Q6003			Q6004			Q6005						Q6006		
MODE	E	C	B	E	C	B	E	C	B	1	2	3	4	5	6	E	C	B
STOP	0.1	5.3	0	5.3	5.0	4.7	2.5	3.0	0.1	0	2.5	0.1	4.5	0	4.4	5.3	5.3	4.8
PLAY	0.1	5.3	0	5.3	5.0	4.7	3.6	3.8	0.2	0	2.5	0.1	4.6	0	4.5	5.3	5.3	4.8
F.F	0.3	5.2	0.3	5.1	5.0	4.6	2.5	3.2	0.1	0	2.5	0.1	4.5	0	4.3	5.2	5.2	4.6
REF. NO.	Q6007			Q6008						Q6201			Q6202					
MODE	E	C	B	1	2	3	4	5		E	C	B	E	C	B			
STOP	0	0	0.5	2.3	1.8	2.5	5.0	4.7		3.6	3.5	3.0	0	0	0.6			
PLAY	0	0	0.5	2.3	1.8	2.5	5.0	4.7		3.6	3.5	3.0	0	4.7	0			
F.F	0	0	0.5	2.3	1.8	2.5	5.1	4.5		3.6	3.5	3.0	0	0	0.6			
REF. NO.	QR6001			QR6002						QR6003			QR6004					
MODE	E	C	B	1	2	3	4	5	6	E	C	B	1	2	3	4	5	6
STOP	4.7	5.0	4.7	0	3.6	4.7	0	0	0	3.3	0	3.6	0	3.6	3.2	3.3	0	0
PLAY	4.7	5.0	4.7	0	3.6	4.7	0	0	0	3.3	0	3.6	3.6	3.6	3.2	3.3	0	0
F.F	4.7	5.0	4.7	0	3.5	4.7	0	0	0	3.3	0.3	3.2	3.6	3.6	3.2	3.3	0	0
REF. NO.	QR6006			QR6007			QR6008			QR6009			Q6010					
MODE	E	C	B	E	C	B	E	C	B	E	C	B	1	2	3	4	5	
STOP	0	0	1.2	0	0	3.5	3.6	3.6	0	5.0	5.0	4.3	2.9	0	3.0	0	0.2	
PLAY	0	0	1.2	0	0	3.6	3.6	3.6	0	5.0	5.0	4.3	2.9	0	3.0	0	0.2	
F.F	0	0	1.2	0	0	3.6	3.6	3.6	0	5.0	5.0	4.3	2.9	0	3.0	0	0.2	
REF. NO.	QR6011			QR6012						QR6014			QR6015			QR6018		
MODE	E	C	B	1	2	3	4	5		E	C	B	E	C	B	E	C	B
STOP	0	0	3.6	3.5	0	3.6	0	0		0	0	3.6	0	5.3	0	0	1.0	0.4
PLAY	0	0	3.6	3.5	0	3.6	0	0		0	0	3.6	0	4.4	0	0	0	0.4
F.F	0	0	3.5	3.5	0	3.5	0	0		0	0	3.6	0	3.8	0	0	1.0	0.4

IC BLOCK

IC6003 (μPD64618S613)
(LOCATION: G-21)


CLK ①
CSB ②
DATA ③
RESET ④
VDD ⑤
CK OUT ⑥
OSC OUT ⑦
OSC IN ⑧
TEST ⑨
VSS ⑩
⑳ H SYNC
⑲ V SYNC
⑱ VB
⑰ VG
⑯ VR
⑮ V BLK
⑭ VC2
⑬ BLK2
⑫ VC1
⑪ BLK1
PROTECTOR
DATA INPUT SHIFT REGISTER
CHARACTER SIZE REGISTER
HORIZONTAL ADDRESS REGISTER
WRITE ADDRESS COUNTER
DATA SELECTOR
VIDEO RAM
CHARACTOR CODE 7BIT x 288 WORD
COLOUR DATA 3BIT x 288 WORD
CHARACTOR DATA 3BIT x 288 WORD
HORIZONTAL SIZE COUNTER
HORIZONTAL POSITION COUNTER
HORIZONTAL ADDRESS COUNTER
VERTICAL ADDRESS REGISTER
BACKGROUND CONTROL DATA REGISTER
INDICATE CONTROL DATA REGISTER
VERTICAL SIZE COUNTER
VERTICAL POSITION COUNTER
VERTICAL ADDRESS COUNTER
OUTPUT CONTROL
CHARACTER GENERATOR ROM 12x18BIT x255WORD
OSC
TEST

3-19. SYSTEM CONTROL & SERVO SCHEMATIC DIAGRAM

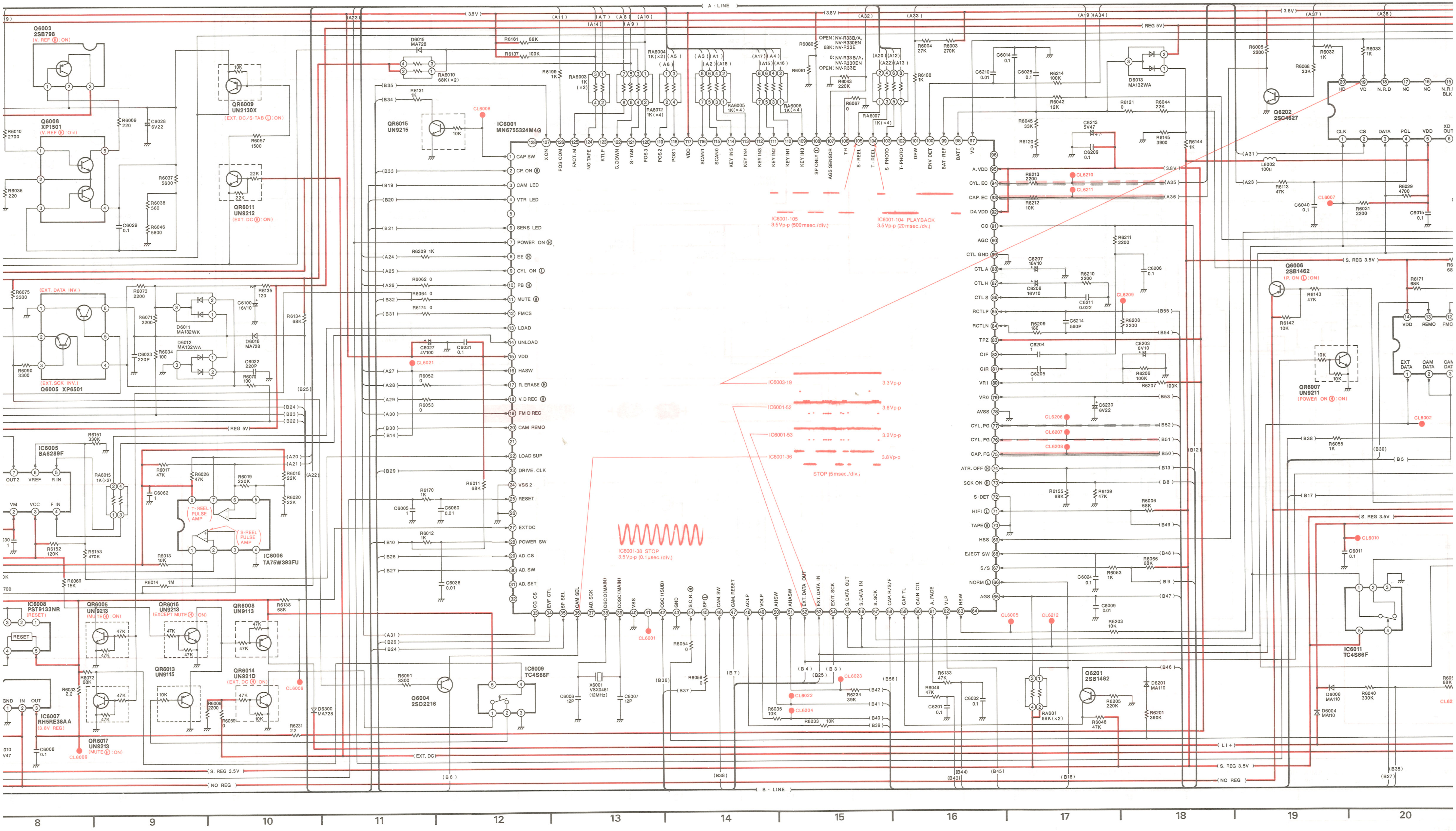

VTR OPERATION UNIT (ESU39009)
EXCEPT NV-R33E
PLAY
SP / LP
PAUSE
T45/30
CAM/VTR
SHIFT
FF
SET
STOP
M.DISP
REW
C.RESET
CAM.LED
VTR.LED
FP6501
D6501
D6502
MA127
TO VTR. OP. FP6006
VTR. LED
GND
KEY IN5
KEY IN2
KEY IN0
KEY IN3
SCAN 0
SCAN 1
KEY IN4
KEY IN1
CAM. LED
A - LINE
B - LINE
ST REG 5V
NO REG
S. REG 3.5V
REG 5V
3.8V
TO PROCESS/Page : 3-29
CAM DATA
CAM CLOCK
CAM RESET
SCK ON
S/S
CAM. P. SW
P. SW (–)
CASSETTE DOWN SW VXA4515 (DOWN : ON)
SESOR LED VEK5549 LN159 LF
MODE SW VSR0088
LOADING MOTOR VEM0406
S-PHOTO SENSOR PN166 VXA4511
SAFETY SW VSH0055 (S-TAB ON)
TO MECA - 1 FP6001
CAS DOWN
NOREG GND
SNS LED
POS 3
POS 2
POS 1
COM
LOAD R
LOAD F
S-PHOTO (+)
S-PHOTO (–)
S-TAB
NC
REEL SENSOR ON2170 LM VXA4530
T-PHOTO SENSOR PN166 VXA4514
TO MECA - 2 FP6002
TREEL OUT (–)
TREEL IN
TREEL OUT (+)
TPHOT (–)
TPHOT (+)
TO TEST PP6004
SDATA
SCLK
RESET
CTL OUT
TRFIX
HASW
SYS REG 5V
B/W MOD/
EP MODE
Y IN
LINE
HIFI / NORM
STAB
COMMON
NOTAPE MODE
FACT MODE
QR6001 UN2130X (EXCEPT EXT. DC/S-TAB : ON)
D6002 MA132WA
Q6003 2SB798 (V. REF : ON)
QR6009 UN2130X (EXT. DC/S-TAB : ON)
D6015 MA728
QR6015 UN9215
QR6002 XP4212 (EXCEPT EXT. DC : ON)
Q6008 XP1501
QR6011 UN9212 (EXT. DC : ON)
QR6010 XP1213 (EXT. SCK INV.) (EXT. DATA INV.)
Q6005 XP6501 (EXT. DATA INV.) (EXT. SCK INV.)
D6011 MA132WK
D6012 MA132WA
D6018 MA728
D6003 MA728
QR6006 UN1212 (S. REG 3.5V : ON)
Q6007 2SD2216 (NOREG : ON)
IC6005 BA6289F
GND OUT2 VREF R IN
OUT1 VM VCC F IN
IC6006 TA75W393FU
T-REEL PULSE AMP
S-REEL PULSE AMP
Q6002 2SD2216
QR6003 UN9112
IC6008 PST9133NR (RESET)
QR6005 UN9213 (MUTE : ON)
QR6016 UN9213 (EXCEPT MUTE : ON)
QR6008 UN9113
QR6004 XP4115 (CAM LED DRIVE) (VTR LED DRIVE)
IC6007 RH5RE38AA (3.8V REG)
GND IN OUT
QR6013 UN9115
QR6014 UN921D (EXT. DC : ON)
QR6017 UN9213 (MUTE : ON)
D6300 MA728
Q6004 2SD2216
CL6021
CL6006
CL6009
EXT. DC
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST

CAPSTAN SERVO SPEED LOOP

CAPSTAN SERVO PHASE LOOP

CYLINDER SERVO SPE

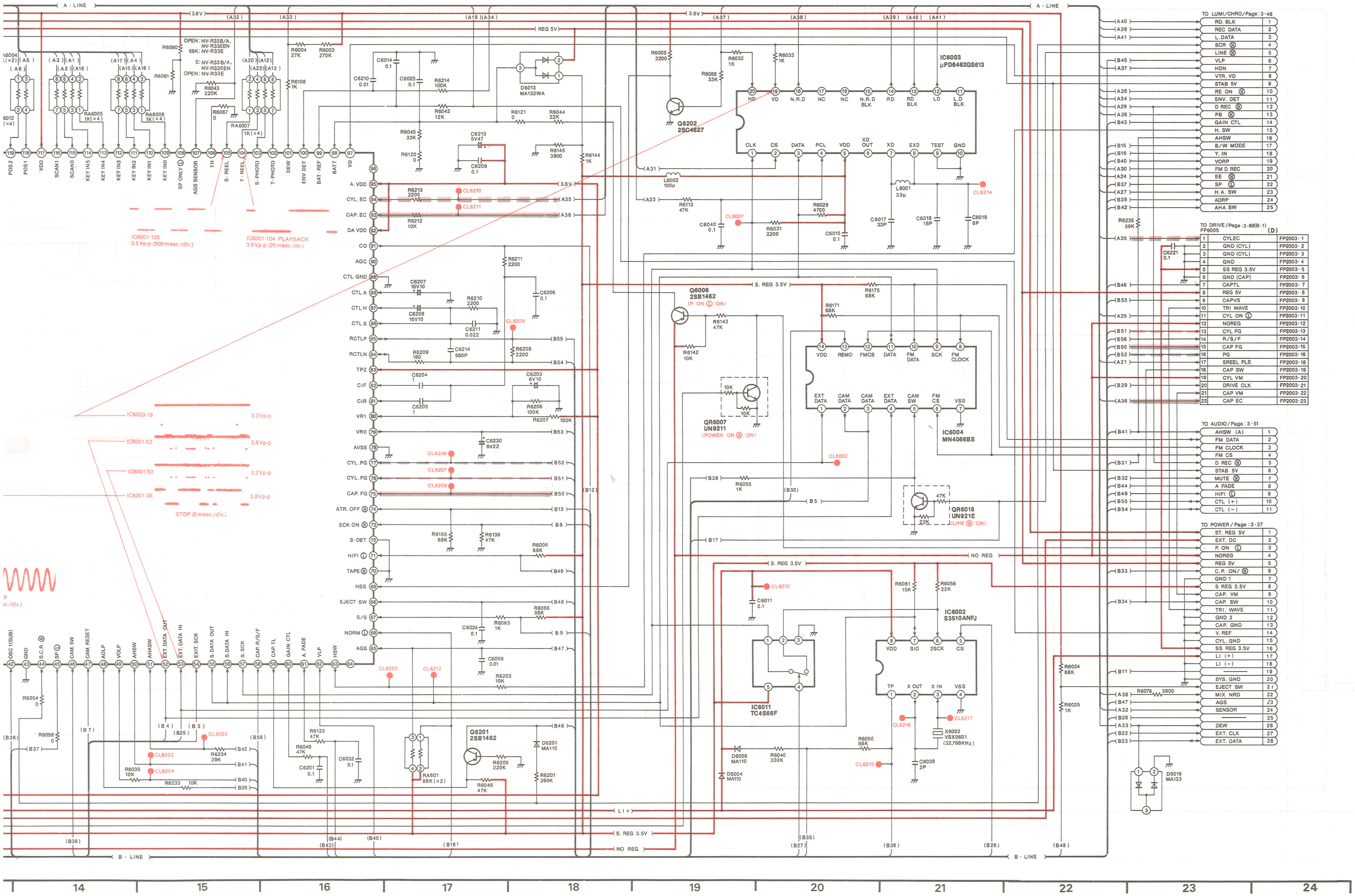

A · LINE
B · LINE
IC6001 MN6755324M4G
Q6003 2SB798
Q6008 XP1501
QR6009 UN2130X
QR6011 UN9212
QR6015 UN9215
Q6005 XP6501
D6011 MA132WK
D6012 MA132WA
D6015 MA728
D6013 MA132WA
Q6202 2SC4627
Q6006 2SB1462
QR6007 UN9211
IC6005 BA6289F
IC6006 TA75W393FU
IC6008 PST9133NR
QR6005 UN9213
QR6016 UN9213
QR6008 UN9113
QR6013 UN9115
QR6014 UN921D
IC6007 RH5RE38AA
QR6017 UN9213
Q6004 2SD2216
IC6009 TC4S66F
X6001 VSX0461 (12MHz)
Q6201 2SB1462
IC6011 TC4S66F
IC6001-105 3.5Vp-p (500msec./div.)
IC6001-104 PLAYBACK 3.5Vp-p (20msec./div.)
IC6003-19 3.3Vp-p
IC6001-52 3.6Vp-p
IC6001-53 3.2Vp-p
IC6001-36 3.8Vp-p
STOP (5msec./div.)
IC6001-38 STOP 3.5Vp-p (0.1μsec./div.)
T-REEL PULSE AMP
S-REEL PULSE AMP
OPEN : NV-R33B/A, NV-R330EN
68K : NV-R33E
0 : NV-R33B/A, NV-R330EN
OPEN : NV-R33E
REG 5V
S. REG 3.5V
NO REG
EXT. DC
8
9
10
11
12
13
14
15
16
17
18
19
20

CAPSTAN SERVO SPEED LOOP

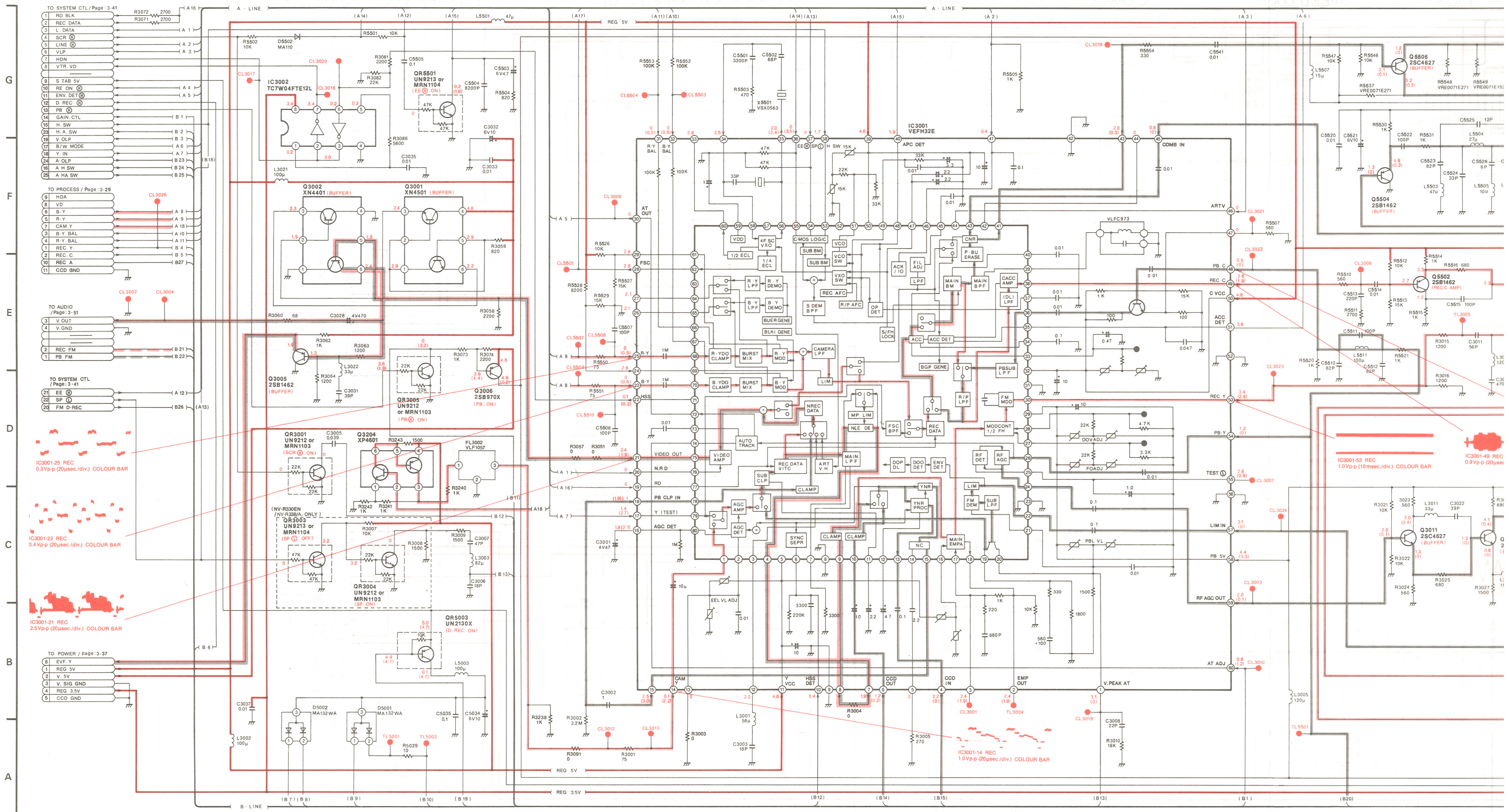
CAPSTAN SERVO PHASE LOOP

CYLINDER SERVO SPEED LOOP

CYLINDER SERVO PHASE LOOP


A - LINE
B - LINE
REG 5V
S. REG 3.5V
NO REG
L I +
IC6003
μPD6462GS613
IC6004
MN4066BS
IC6002
S3510ANFJ
IC6011
TC4S66F
Q6202
2SC4627
Q6006
2SB1462
(P. ON Ⓛ : ON)
QR6007
UN9211
(POWER ON Ⓗ : ON)
QR6018
UN921E
(LINE Ⓗ : ON)
Q6201
2SB1462
D6013
MA132WA
X6002
VSX0601
(32.768KHz)
D6016
MA133
OPEN : NV-R33B/A, NV-R330EN
68K : NV-R33E
0 : NV-R33B/A, NV-R330EN
OPEN : NV-R33E
IC6001-105
3.5Vp-p (500msec./div.)
IC6001-104 PLAYBACK
3.5Vp-p (20msec./div.)
IC6003-19
3.3Vp-p
IC6001-52
3.6Vp-p
IC6001-53
3.2Vp-p
IC6001-36
3.8Vp-p
STOP (5msec./div.)
TO LUMI/CHRO / Page : 3-46
RD. BLK
REC DATA
L. DATA
SCR Ⓗ
LINE Ⓗ
VLP
HDN
VTR. VD
STAB 5V
RE ON Ⓗ
ENV. DET
D REC Ⓗ
PB Ⓗ
GAIN CTL
H. SW
AHSW
B/W MODE
Y. IN
VORP
FM D REC
EE Ⓗ
SP Ⓛ
H.A. SW
ADRP
AHA SW
TO DRIVE / Page : 3-69(B-1)
FP6005
CYL.EC
GND (CYL)
GND (CYL)
GND
SS REG 3.5V
GND (CAP)
CAPTL
REG 5V
CAPVS
TRI WAVE
CYL ON Ⓛ
NOREG
CYL FG
R/S/F
CAP FG
PG
SREEL PLS
CAP SW
CYL VM
DRIVE CLK
CAP VM
CAP EC
TO AUDIO / Page : 3-51
AHSW (A)
FM DATA
FM CLOCK
FM CS
D REC Ⓗ
STAB 5V
MUTE Ⓗ
A FADE
HIFI Ⓛ
CTL (+)
CTL (−)
TO POWER / Page : 3-37
ST. REG 5V
EXT. DC
P. ON Ⓛ
NOREG
REG 5V
C.P. ON/Ⓗ
GND 1
S REG 3.5V
CAP. VM
CAP. SW
TRI. WAVE
GND 2
CAP. GND
V. REF
CYL. GND
SS REG 3.5V
LI (+)
LI (−)
SYS. GND
EJECT SW
MIX NRD
AGS
SENSOR
DEW
EXT. CLK
EXT. DATA
14
15
16
17
18
19
20
21
22
23
24

3-20. LUMINANCE/CHROMINANCE & HEAD AMP SCHEMATIC DIAGRAM


TO SYSTEM CTL / Page : 3-41
RD BLK
REC DATA
L. DATA
SCR Ⓡ
LINE Ⓡ
VLP
HDN
VTR. VD
S TAB 5V
RE ON Ⓡ
ENV. DET Ⓡ
D REC Ⓡ
PB Ⓡ
GAIN. CTL
H. SW
H. A. SW
V. OLP
B/W MODE
Y. IN
A OLP
A H SW
A HA SW
TO PROCESS / Page : 3-29
HDA
VD
B-Y
R-Y
CAM.Y
B-Y. BAL
R-Y. BAL
REC Y
REC C
REC A
CCD GND
TO AUDIO / Page : 3-51
V. OUT
V. GND
REC FM
PB FM
TO SYSTEM CTL / Page : 3-41
EE Ⓛ
SP Ⓛ
FM D-REC
IC3001-25 REC
0.3Vp-p (20μsec./div.) COLOUR BAR
IC3001-23 REC
0.4Vp-p (20μsec./div.) COLOUR BAR
IC3001-21 REC
2.5Vp-p (20μsec./div.) COLOUR BAR
TO POWER / Page : 3-37
EVF. V
REG 5V
V. 5V
V. SIG GND
REG 3.5V
CCD GND
A - LINE
B - LINE
REG 5V
REG 3.5V
IC3002
TC7W04FTE12L
Q3002
XN4401 (BUFFER)
Q3001
XN4501 (BUFFER)
QR5501
UN9213 or
MRN1104
(EE Ⓡ : ON)
Q3005
2SB1462
(BUFFER)
QR3005
UN9212
or MRN1103
(PB Ⓡ : ON)
Q3006
2SB970X
(PB : ON)
QR3001
UN9212 or
MRN1103
(SCR Ⓡ : ON)
Q3204
XP4601
FL3002
VLF1057
(NV-R330EN / NV-R33B/A. ONLY)
QR3003
UN9213 or
MRN1104
(SP Ⓛ : OFF)
QR3004
UN9212 or
MRN1103
(SP : ON)
QR5003
UN2130X
(D-REC : ON)
D5002
MA132WA
D5001
MA132WA
IC3001
VEFH32E
APC DET
VLFC973
COMB IN
ARTV
PB C
REC C
C VCC
ACC DET
REC Y
PB Y
TEST Ⓛ
LIM IN
PB 5V
RF AGC OUT
AT ADJ
V. PEAK AT
AT OUT
FSC
HSS
VIDEO OUT
N.R D
RD
PB CLP IN
Y (TEST)
AGC DET
EEL VL ADJ
CAM Y
Y VCC
HSS DET
CCD OUT
CCD IN
EMP OUT
Q5506
2SC4627
(BUFFER)
Q5504
2SB1462
(BUFFER)
Q5502
2SB1462
(REC C AMP)
Q3011
2SC4627
(BUFFER)
IC3001-53 REC
1.0Vp-p (10μsec./div.) COLOUR BAR
IC3001-49 REC
0.9Vp-p (20μsec
IC3001-14 REC
1.0Vp-p (20μsec./div.) COLOUR BAR
1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G

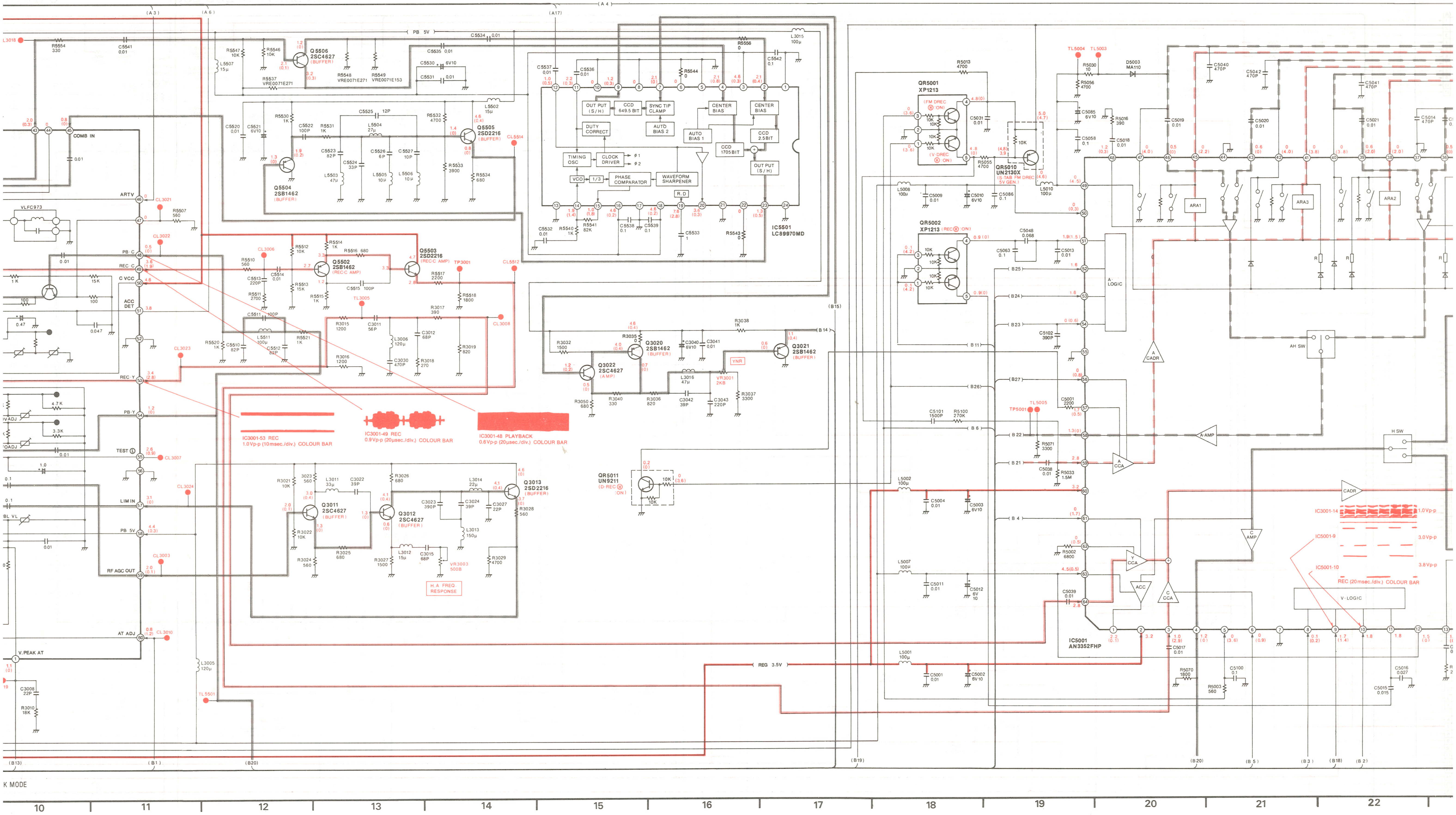
NOTE : DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE : THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE COLOUR CHART. (SP MODE)

THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.

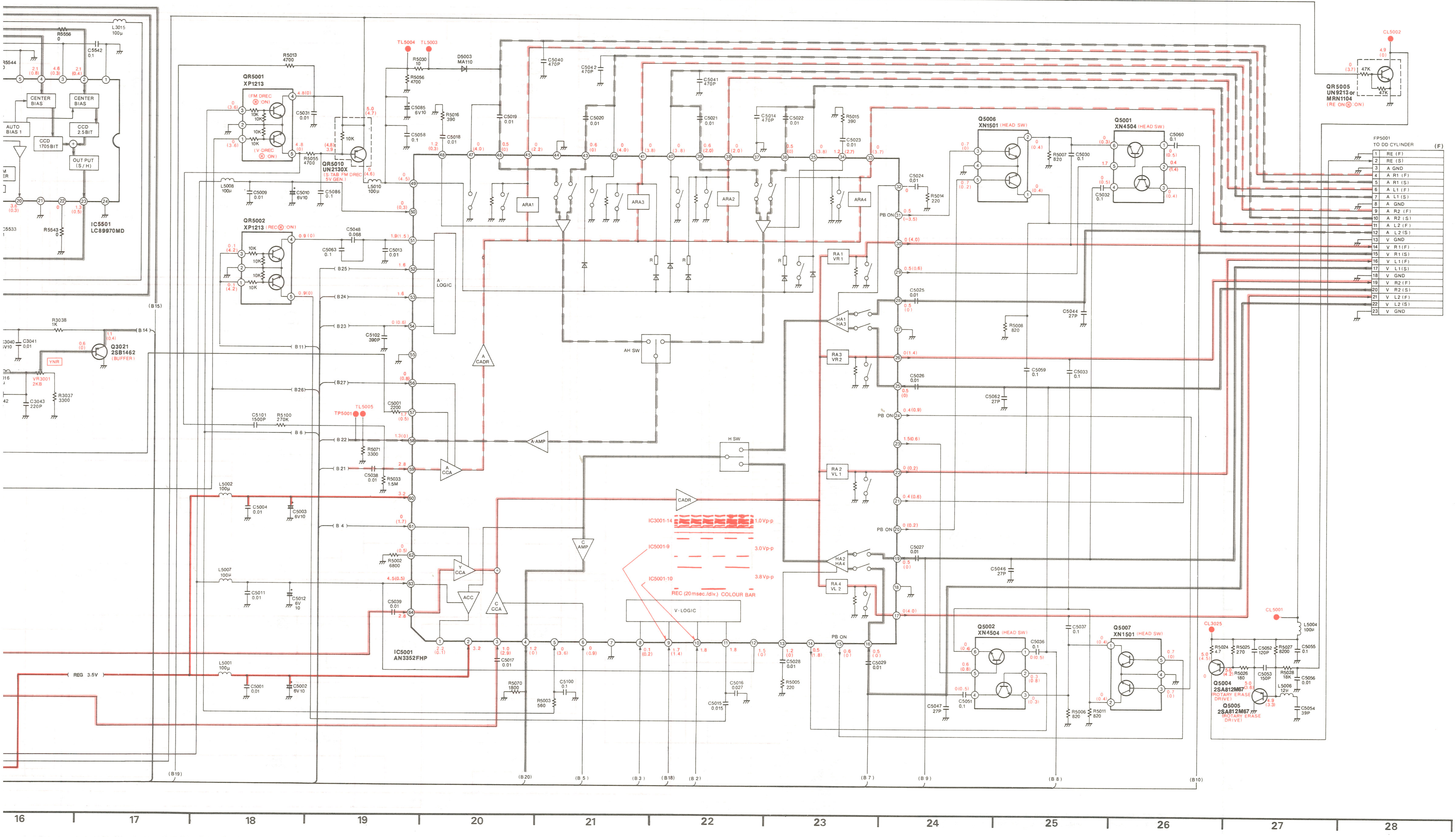
Back Page:
SYSTEM CTL & SERVO Section

VIDEO MAIN SIGNAL PATH IN REC M
VIDEO MAIN SIGNAL PATH IN PLAYB

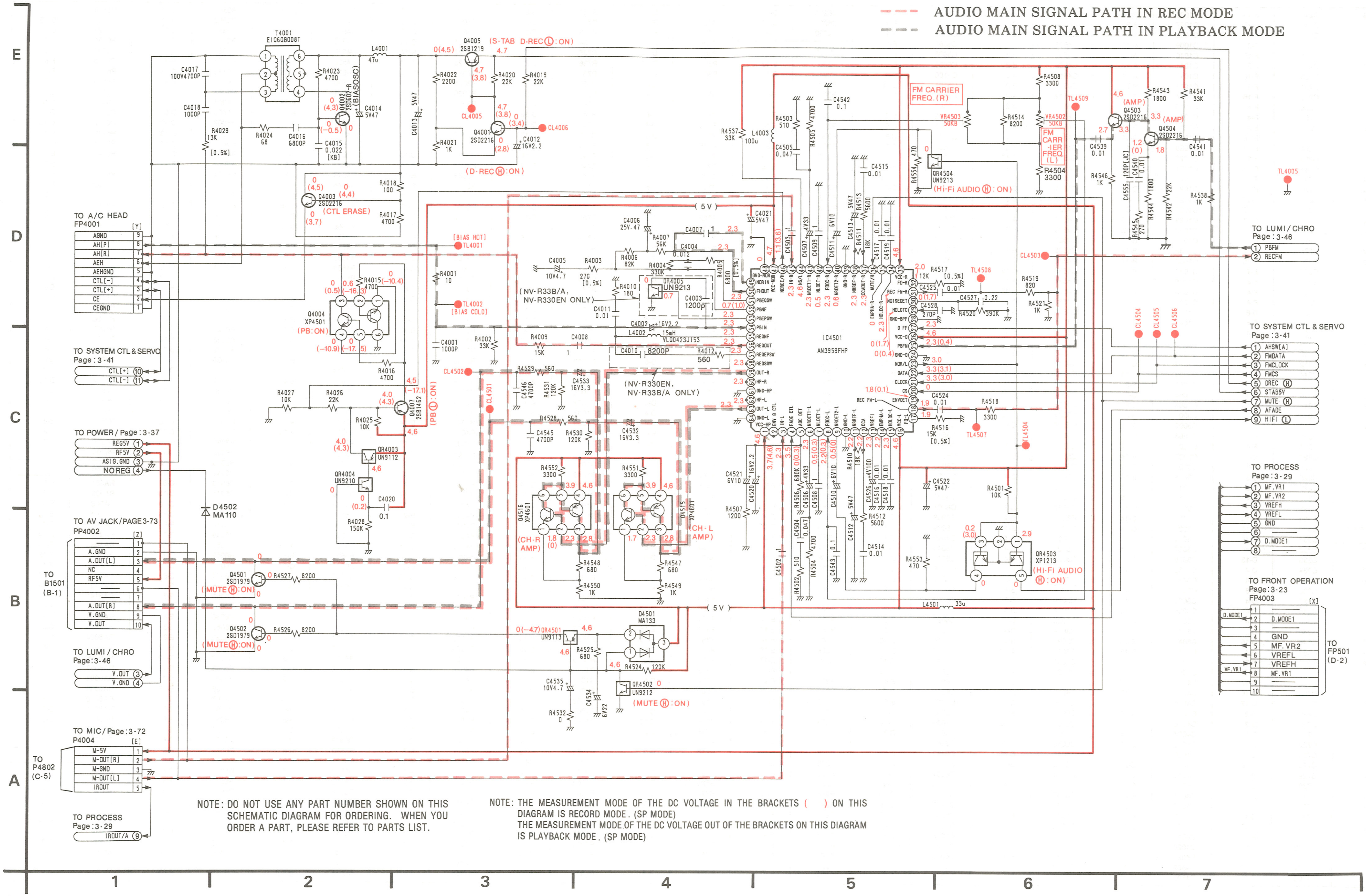

(A 3)
(A 6)
(A17)
(A 4)
PB 5V
Q5506 2SC4627 (BUFFER)
Q5505 2SD2216 (BUFFER)
Q5504 2SB1462 (BUFFER)
Q5502 2SB1462 (REC C AMP)
Q5503 2SD2216 (REC C AMP)
TP3001
CL5512
CL5514
CL3001
CL3005
CL3006
CL3008
CL3021
CL3022
CL3023
CL3024
CL3003
CL3007
CL3010
TL5501
L3018
COMB IN
ARTV
VLFC973
PB C
REC C
C VCC
ACC DET
REC Y
PB Y
TEST
LIM IN
BL VL
PB 5V
RF AGC OUT
AT ADJ
V. PEAK AT
OUT PUT (S/H)
CCD 649.5 BIT
SYNC TIP CLAMP
CENTER BIAS
CENTER BIAS
DUTY CORRECT
AUTO BIAS 2
AUTO BIAS 1
CCD 2.5 BIT
CCD 1705 BIT
TIMING OSC
CLOCK DRIVER
VCO
1/3
PHASE COMPARATOR
WAVEFORM SHARPENER
R. D
OUT PUT (S/H)
IC5501 LC89970MD
Q3020 2SB1462 (BUFFER)
Q3021 2SB1462 (BUFFER)
Q3022 2SC4627 (AMP)
YNR
VR3001 2KB
IC3001-53 REC 1.0Vp-p (10msec./div.) COLOUR BAR
IC3001-49 REC 0.9Vp-p (20μsec./div.) COLOUR BAR
IC3001-48 PLAYBACK 0.6Vp-p (20μsec./div.) COLOUR BAR
QR5011 UN9211 (D-REC ⓗ ON)
Q3011 2SC4627 (BUFFER)
Q3012 2SC4627 (BUFFER)
Q3013 2SD2216 (BUFFER)
VR3003 500B
H. A. FREQ RESPONSE
QR5001 XP1213 (FM DREC ⓗ ON) (V-DREC ⓗ ON)
QR5002 XP1213 (REC ⓗ ON)
QR5010 UN2130X (S-TAB FM DREC 5V GEN.)
TL5004
TL5003
TL5005
TP5001
D5003 MA110
REG 3.5V
A LOGIC
A CADR
A-AMP
A CCA
Y CCA
ACC
C CCA
C AMP
CADR
AH SW
H SW
ARA1
ARA2
ARA3
V-LOGIC
IC3001-14 1.0Vp-p
IC5001-9 3.0Vp-p
IC5001-10 3.8Vp-p
REC (20msec./div.) COLOUR BAR
IC5001 AN3352FHP
(B13)
(B 1)
(B20)
(B19)
(B15)
(B14)
(B 11)
(B 26)
(B 6)
(B 25)
(B 24)
(B 23)
(B 27)
(B 22)
(B 21)
(B 4)
(B20)
(B 5)
(B 3)
(B18)
(B 2)
10
11
12
13
14
15
16
17
18
19
20
21
22

K MODE

VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE


IC5501
LC89970MD
CENTER BIAS
CCD 2.5BIT
CCD 1705BIT
AUTO BIAS 1
OUT PUT (S/H)
L3015 100µ
R5556 0
C5542 0.1
QR5001
XP1213
(FM DREC Ⓡ·ON)
(V·DREC Ⓡ·ON)
QR5002
XP1213 (REC Ⓡ·ON)
QR5010
UN2130X
(S.TAB FM DREC 5V GEN.)
R5013 4700
R5055 4700
TL5004
TL5003
R5030 10
D5003 MA110
R5056 4700
C5085 6V10
R5016 390
C5058 0.1
C5018 0.01
C5019 0.01
C5040 470P
C5042 470P
C5041 470P
C5020 0.01
C5021 0.01
C5014 470P
C5022 0.01
R5015 390
C5023 0.01
L5008 100µ
L5010 100µ
C5009 0.01
C5010 6V10
C5086 0.1
C5031 0.01
C5048 0.068
C5063 0.1
C5013 0.01
A LOGIC
ARA1
ARA2
ARA3
ARA4
AH SW
A CADR
A·AMP
CCA
Y CCA
C CCA
ACC
C AMP
CADR
H SW
V·LOGIC
R3038 1K
C3041 0.01
Q3021
2SB1462
(BUFFER)
YNR
VR3001 2KB
R3037 3300
C3043 220P
C5102 390P
C5001 2200
TL5005
TP5001
C5101 1500P
R5100 270K
R5071 3300
C5038 0.01
R5033 1.5M
L5002 100µ
C5004 0.01
C5003 6V10
L5007 100µ
C5011 0.01
C5012 6V 10
R5002 6800
C5039 0.01
L5001 100µ
C5001 0.01
C5002 6V10
REG 3.5V
IC5001
AN3352FHP
C5017 0.01
R5070 1800
R5003 560
C5100 0.1
C5016 0.027
C5015 0.015
C5028 0.01
R5005 220
C5029 0.01
IC3001-14 1.0Vp-p
IC5001-9 3.0Vp-p
IC5001-10 3.8Vp-p
REC (20msec./div.) COLOUR BAR
PB ON
RA1 VR1
HA1 HA3
RA3 VR2
RA2 VL1
HA2 HA4
RA4 VL2
C5024 0.01
R5014 220
C5025 0.01
C5026 0.01
C5027 0.01
R5008 820
C5044 27P
C5059 0.1
C5033 0.1
C5062 27P
C5046 27P
Q5006
XN1501 (HEAD SW)
Q5001
XN4504 (HEAD SW)
R5007 820
C5030 0.1
C5060 0.1
C5032 0.1
Q5002
XN4504 (HEAD SW)
Q5007
XN1501 (HEAD SW)
C5036 0.1
C5037 0.1
C5047 27P
C5051 0.1
R5006 820
R5011 820
CL5002
QR5005
UN9213 or
MRN1104
(RE ON Ⓡ·ON)
47K
47K
CL3025
CL5001
L5004 100µ
R5024 4.7
R5025 270
C5052 120P
R5027 8200
C5055 0.1
R5026 180
C5053 150P
R5028 18K
C5056 0.01
L5006 12µ
C5054 39P
Q5004
2SA812M67
(ROTARY ERASE DRIVE)
Q5005
2SA812M67
(ROTARY ERASE DRIVE)
FP5001
TO DD CYLINDER
(F)
1 RE (F)
2 RE (S)
3 A GND
4 A R1 (F)
5 A R1 (S)
6 A L1 (F)
7 A L1 (S)
8 A GND
9 A R2 (F)
10 A R2 (S)
11 A L2 (F)
12 A L2 (S)
13 V GND
14 V R1 (F)
15 V R1 (S)
16 V L1 (F)
17 V L1 (S)
18 V GND
19 V R2 (F)
20 V R2 (S)
21 V L2 (F)
22 V L2 (S)
23 V GND
(B15)
(B14)
(B11)
(B26)
(B6)
(B25)
(B24)
(B23)
(B27)
(B22)
(B21)
(B4)
(B19)
(B20)
(B5)
(B3)
(B18)
(B2)
(B7)
(B9)
(B8)
(B10)
16
17
18
19
20
21
22
23
24
25
26
27
28

3-21. AUDIO SCHEMATIC DIAGRAM


AUDIO MAIN SIGNAL PATH IN REC MODE

AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

E
D
C
B
A
1
2
3
4
5
6
7
T4001
EI06Q8008T
L4001
47u
Q4005
2SB1219
(S-TAB D-REC Ⓛ:ON)
C4017
100V4700P
R4023
4700
Q4002
2SD602-R
(BIAS OSC)
C4014
5V47
C4018
1000P
R4029
13K
[0.5%]
R4024
68
C4016
6800P
C4015
0.022
[KB]
R4022
2200
R4020
22K
R4019
22K
CL4005
CL4006
Q4001
2SD2216
R4021
1K
C4012
16V2.2
(D-REC Ⓗ:ON)
Q4003
2SD2216
(CTL ERASE)
R4018
100
R4017
4700
TO A/C HEAD
FP4001
AGND
AH[P]
AH[R]
AEH
AEHGND
CTL[-]
CTL[+]
CE
CEGND
[BIAS HOT]
TL4001
R4001
10
TL4002
[BIAS COLD]
Q4004
XP4501
(PB:ON)
R4015
4700
R4016
4700
C4001
1000P
R4002
33K
TO SYSTEM CTL & SERVO
Page:3-41
CTL[+]
CTL[-]
R4027
10K
R4026
22K
R4025
10K
Q4007
2SB1462
(PB Ⓛ:ON)
QR4003
UN9112
QR4004
UN9210
C4020
0.1
R4028
150K
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RF5V
ASIG.GND
NOREG
D4502
MA110
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A.OUT[L]
NC
RF5V
A.OUT[R]
V.GND
V.OUT
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Q4501
2SD1979
(MUTE Ⓗ:ON)
R4527
8200
Q4502
2SD1979
(MUTE Ⓗ:ON)
R4526
8200
TO LUMI / CHRO
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V.GND
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M-5V
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M-GND
M-OUT[L]
IROUT
TO P4802 (C-5)
TO PROCESS
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IROUT/A
CL4502
CL4501
C4006
25V.47
R4007
56K
C4007
1
C4004
0.012
C4005
10V4.7
R4003
270
[0.5%]
R4006
82K
R4004
330K
(NV-R33B/A, NV-R330EN ONLY)
R4010
180
QR4005
UN9213
C4003
1200P
C4011
0.01
C4002
16V2.2
L4002
15mH
VLQ0423J153
R4009
15K
C4008
1
C4010
8200P
R4012
560
(NV-R330EN, NV-R33B/A ONLY)
5 V
C4021
5V47
R4529
560
C4546
4700P
R4531
120K
C4533
16V3.3
R4528
560
C4545
4700P
R4530
120K
C4532
16V3.3
R4552
3300
R4551
3300
Q4516
XP4601
(CH-R AMP)
Q4515
XP4601
(CH-L AMP)
R4548
680
R4550
1K
R4547
680
R4549
1K
D4501
MA133
QR4501
UN9113
R4525
680
R4524
120K
C4535
10V4.7
C4534
6V22
QR4502
UN9212
(MUTE Ⓗ:ON)
R4532
0
IC4501
AN3959FHP
R4537
33K
L4003
100u
R4503
510
C4505
0.047
C4542
0.1
R4505
R4508
3300
FM CARRIER FREQ.(R)
VR4503
50KB
R4514
8200
VR4502
50KB
FM CARR-IER FREQ (L)
R4504
3300
R4554
470
QR4504
UN9213
(Hi-Fi AUDIO Ⓗ:ON)
C4515
0.01
TL4509
Q4503
2SD2216
(AMP)
Q4504
2SD2216
(AMP)
R4543
1800
R4541
33K
C4539
0.01
C4541
0.01
R4546
1K
C4555
120P(JC)
C4540
0.01
R4544
1800
R4542
22K
R4545
270
R4538
1K
TL4005
TO LUMI / CHRO
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PBFM
RECFM
CL4503
R4517
12K
[0.5%]
TL4508
C4525
0.01
C4527
0.22
C4528
270P
R4520
390K
R4519
820
R4521
1K
CL4504
CL4505
CL4506
TO SYSTEM CTL & SERVO
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AHSW[A]
FMDATA
FMCLOCK
FMCS
DREC Ⓗ
STAB5V
MUTE Ⓗ
AFADE
HIFI Ⓛ
C4524
0.01
R4518
3300
R4516
15K
[0.5%]
TL4507
TL4504
C4522
5V47
R4501
10K
C4521
6V10
C4520
16V2.2
R4507
1200
R4506
680K
C4506
4V33
C4508
C4510
6V10
C4512
5V47
R4510
18K
C4516
4V100
C4518
0.01
R4512
5600
C4514
0.01
C4504
0.047
R4502
510
C4502
R4504
4700
C4503
0.1
R4553
470
XP4503
XP1213
(Hi-Fi AUDIO Ⓗ:ON)
L4501
33u
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VREFL
GND
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TO FRONT OPERATION
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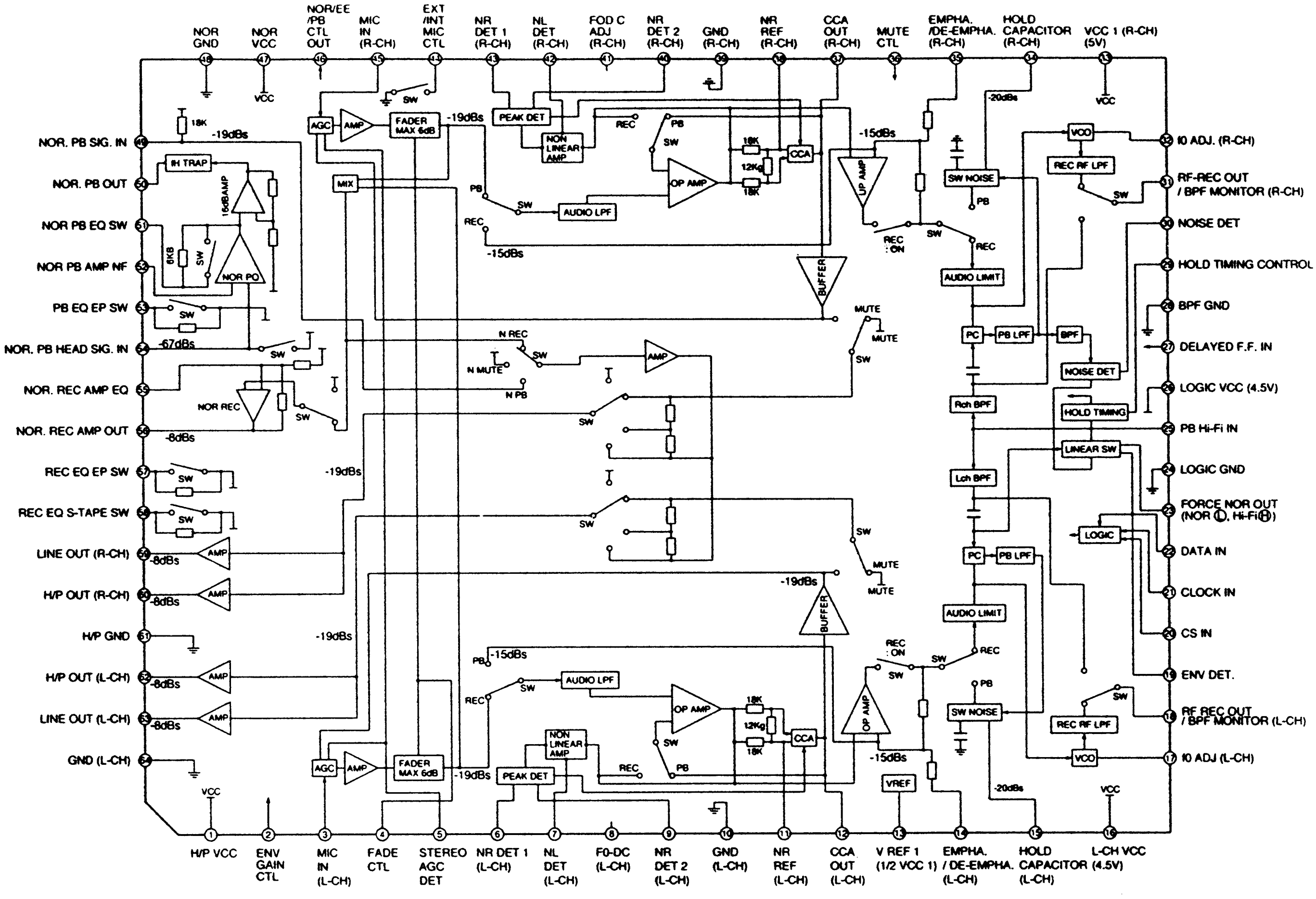
GND
MF.VR2
VREFL
VREFH
MF.VR1
TO FP501 (D-2)

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE. (SP MODE)

IC BLOCK

IC4501 (AN3959FHP)
(LOCATION: C-5)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NOR VCC 47
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MIC IN (R-CH) 45
EXT /INT MIC CTL 44
NR DET 1 (R-CH) 43
NL DET (R-CH) 42
FOD C ADJ (R-CH) 41
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NOR PB AMP NF 52
PB EQ EP SW 53
NOR. PB HEAD SIG. IN 54
NOR. REC AMP EQ 55
NOR. REC AMP OUT 56
REC EQ EP SW 57
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GND (L-CH) 64
32 f0 ADJ. (R-CH)
31 RF-REC OUT / BPF MONITOR (R-CH)
30 NOISE DET
29 HOLD TIMING CONTROL
28 BPF GND
27 DELAYED F.F. IN
26 LOGIC VCC (4.5V)
25 PB Hi-Fi IN
24 LOGIC GND
23 FORCE NOR OUT (NOR Ⓛ, Hi-Fi Ⓗ)
22 DATA IN
21 CLOCK IN
20 CS IN
19 ENV DET.
18 RF REC OUT / BPF MONITOR (L-CH)
17 f0 ADJ (L-CH)
1 H/P VCC
2 ENV GAIN CTL
3 MIC IN (L-CH)
4 FADE CTL
5 STEREO AGC DET
6 NR DET 1 (L-CH)
7 NL DET (L-CH)
8 F0-DC (L-CH)
9 NR DET 2 (L-CH)
10 GND (L-CH)
11 NR REF (L-CH)
12 CCA OUT (L-CH)
13 V REF 1 (1/2 VCC 1)
14 EMPHA. / DE-EMPHA. (L-CH)
15 HOLD CAPACITOR (L-CH)
16 L-CH VCC (4.5V)
VCC
SW
AGC
AMP
FADER MAX 6dB
-19dBs
PEAK DET
NON LINEAR AMP
REC
PB
18K
12Kg
CCA
-15dBs
OP AMP
UP AMP
-20dBs
VCO
REC RF LPF
SW NOISE
AUDIO LPF
MIX
IH TRAP
16dBAMP
6KB
NOR PO
REC : ON
AUDIO LIMIT
BUFFER
MUTE
N REC
N MUTE
N PB
-67dBs
NOR REC
-8dBs
PC
PB LPF
BPF
NOISE DET
Rch BPF
HOLD TIMING
LINEAR SW
Lch BPF
LOGIC
VREF

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MAIN C.B.A. Section

MAIN C.B.A.

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IC211	E-18
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IC302	E-4
IC303	F-13
IC305	D-14
IC307	D-16
IC308	D-3
IC309	D-5
IC315	D-13
IC705	D-17
IC706	D-2
IC707	D-17
IC708	D-1
IC1001	B-12
IC3001	B-5
IC3002	B-13
IC4501	B-17
IC5001	B-13
IC5501	C-13
IC6001	D-11
IC6002	E-7
IC6003	D-7
IC6004	E-7
IC6005	E-8
IC6006	F-12
IC6007	C-9
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IC6009	F-6
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Transistor

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Q209	F-17
Q210	F-17
Q211	F-17
Q301	D-6
Q302	D-6
Q303	D-3
Q304	F-15
Q704	D-2
Q705	C-2
Q1001	C-11
Q1002	C-12
Q1003	A-11
Q1004	A-11
Q1005	C-12
Q1006	C-11
Q1062	B-11
Q3001	D-15
Q3002	D-15
Q3005	C-4
Q3006	C-13
Q3011	C-14
Q3012	C-14
Q3013	D-14
Q3020	B-13
Q3021	B-13
Q3022	B-13
Q3204	D-13
Q4001	C-1
Q4002	C-2
Q4003	C-2
Q4004	C-17
Q4005	C-2
Q4007	C-17
Q4501	C-16
Q4502	C-16
Q4503	A-1
Q4504	A-2
Q4515	C-17
Q4516	C-17
Q5001	A-4
Q5002	A-3
Q5004	A-14
Q5005	B-14
Q5006	A-4
Q5007	A-3
Q5502	C-4
Q5503	C-3
Q5504	C-5
Q5505	C-6
Q5506	B-13
Q6002	E-10
Q6003	D-12
Q6004	E-6
Q6005	D-7
Q6006	C-10
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QR303	D-4
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QR3001	A-13
QR3003	B-14
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QR4005	C-17
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QR5001	B-3
QR5002	B-16
QR5003	B-16
QR5005	B-15
QR5010	C-15
QR5011	C-13
QR5501	C-5
QR6001	D-7
QR6002	D-13
QR6003	E-10
QR6004	F-6
QR6005	F-7
QR6006	E-10
QR6007	C-10
QR6008	F-6
QR6009	C-12
QR6010	E-7
QR6011	D-12
QR6013	F-7
QR6014	E-7
QR6015	D-7
QR6016	F-7
QR6017	F-6
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Diode

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D206	F-3
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D209	F-17
D210	E-17
D211	E-17
D212	F-4
D213	F-5
D214	F-2
D301	F-6
D302	D-4
D303	D-4
D304	D-5
D305	E-15
D306	E-5
D307	E-15
D308	E-3
D309	D-3
D701	C-2
D1002	B-11
D1004	B-11
D1005	B-11
D1006	B-11
D1007	B-11
D1008	C-12
D1012	A-6
D1015	B-11
D1062	B-11
D1064	B-11
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D5001	A-16
D5002	B-16
D5003	B-15
D5502	A-13
D6002	D-12
D6003	E-10
D6004	E-12
D6008	E-12
D6011	D-6
D6012	D-6
D6013	C-10
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CL203	F-15
CL204	F-16
CL205	D-7
CL206	E-17
CL301	E-16
CL302	D-15
CL303	E-14
CL304	E-14
CL305	E-14
CL306	D-15
CL307	D-15
CL308	D-14
CL309	F-14
CL310	E-15
CL311	E-15
CL312	D-15
CL313	D-15
CL316	D-16
CL320	D-15
CL322	D-14
CL323	E-14
CL324	E-14
CL325	E-14
CL326	E-13
CL327	E-13
CL328	E-13
CL329	E-13
CL330	E-13
CL701	D-16
CL702	D-16
CL705	D-16
CL1003	C-13
CL1004	C-12
CL1005	C-12
CL1006	C-12
CL1007	B-10
CL1008	A-10
CL1009	A-10
CL1010	B-10
CL1011	C-12
CL1013	C-11
CL1014	C-11
CL3001	A-14
CL3002	A-18
CL3003	B-14
CL3004	A-18
CL3006	C-15
CL3007	B-14
CL3008	C-15
CL3009	B-13
CL3010	B-13
CL3012	A-13
CL3013	A-13
CL3016	B-13
CL3017	A-13
CL3018	B-14
CL3019	B-14
CL3020	A-13
CL3021	B-14
CL3022	C-16
CL3023	C-15
CL3024	C-14
CL3025	B-14
CL4005	C-17
CL4006	C-17
CL4501	A-18
CL4502	A-18
CL4503	A-16
CL4504	A-17
CL4505	A-17
CL4506	A-17
CL5001	C-12
CL5002	B-14
CL5501	B-14
CL5503	C-15
CL5504	C-15
CL5507	A-13
CL5508	B-13
CL5509	B-13
CL5510	B-13
CL5512	C-15
CL5514	B-13
CL6001	E-11
CL6002	E-12
CL6005	E-10
CL6006	E-12
CL6007	E-12
CL6008	D-11
CL6009	C-10
CL6010	E-13
CL6021	D-11
CL6022	E-11
CL6023	E-10
CL6204	D-12
CL6206	E-10
CL6207	D-10
CL6208	E-10
CL6209	D-10
CL6210	C-10
CL6211	C-10
CL6212	E-12
CL6214	D-12
CL6215	E-11
CL6216	E-12
CL6217	E-12
TL202	E-18
TL701	D-17
TL702	D-16
TL703	D-16
TL704	D-16
TL1001	C-10
TL3004	A-14
TL3005	C-15
TL4001	C-17
TL4002	C-17
TL4005	A-17
TL4504	A-17
TL4507	A-16
TL4508	A-17
TL4509	A-17
TL5001	A-16
TL5002	A-16
TL5003	C-15
TL5004	C-15
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L201	D-3
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L203	E-2
L204	E-3
L205	E-2
L206	E-16
L208	E-18
L209	E-16
L210	E-3
L211	F-16
L215	F-17
L220	E-17
L230	F-17
L231	F-17
L301	E-15
L302	E-6
L303	F-5
L304	F-15
L305	F-15
L306	D-6
L307	F-14
L308	F-5
L309	E-16
L310	E-4
L311	E-15
L312	F-4
L313	F-14
L314	F-5
L315	D-5
L316	D-3
L317	D-16
L318	E-6
L319	D-6
L320	F-4
L321	E-3
L701	D-16
L703	D-2
L706	D-16
L707	D-3
L1001	B-9
L1002	B-7
L1003	C-7
L1006	B-11
L1007	A-8
L1008	A-7
L1009	B-11
L1010	B-11
L1011	A-11
L1012	B-12
L1014	B-11
L1015	B-11
L1062	C-8
L3001	A-6
L3002	A-14
L3003	B-14
L3005	B-15
L3006	D-15
L3011	C-14
L3012	C-14
L3013	C-14
L3014	D-14
L3015	B-13
L3016	B-13
L3021	C-5
L3022	C-4
L4001	C-2
L4002	B-2
L4003	B-1
L4501	C-2
L5001	B-16
L5002	B-16
L5003	B-16
L5004	B-14
L5006	B-14
L5007	B-15
L5008	B-15
L5010	C-4
L5501	B-14
L5502	C-6
L5503	C-6
L5504	C-6
L5505	C-6
L5506	B-6
L5507	C-13
L5511	C-16
L6001	D-7
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Capacitor

C202	D-18
C203	D-18
C204	E-17
C205	D-16
C206	E-17
C207	E-17
C212	F-1
C213	E-18
C215	E-17
C216	E-17
C217	E-16
C218	E-16
C220	E-2
C221	E-3
C222	F-17
C225	E-16
C226	E-3
C227	E-17
C231	E-17
C232	F-18
C233	E-3
C234	E-3
C235	F-18
C236	F-2
C237	F-17
C238	F-16
C239	F-3
C240	F-16
C241	E-3
C242	E-3
C243	E-16
C244	E-16
C245	F-3
C246	E-15
C247	E-16
C249	F-3
C250	F-3
C251	F-15
C252	F-3
C253	F-16
C254	F-3
C255	F-16
C256	F-4
C257	F-4
C258	E-3
C262	E-18
C264	E-18
C265	E-17
C266	F-17
C267	F-17
C270	F-17
C271	E-17
C272	F-17
C273	F-17
C274	F-17
C275	E-17
C276	E-17
C301	F-15
C302	E-4
C303	F-4
C304	F-4
C305	F-4
C306	D-6
C307	E-4
C308	E-4
C309	E-4
C310	E-4
C312	F-5
C314	D-6
C315	F-5
C316	D-6
C317	D-13
C318	D-13
C319	F-14
C320	E-4
C321	F-4
C323	C-3
C324	F-6
C325	D-3
C326	D-5
C327	F-4
C328	D-13
C329	D-14
C330	E-14
C331	D-15
C332	D-4
C333	D-13
C334	D-4
C335	D-4
C336	D-6
C337	D-4
C338	D-4
C344	D-4
C345	D-3
C346	D-16
C353	D-4
C371	D-5
C701	C-17
C702	C-17
C703	D-16
C711	D-17
C719	D-2
C720	D-2
C721	D-3
C722	D-3
C724	C-17
C725	D-16
C729	D-1
C730	D-17
C731	D-16
C732	D-1
C737	C-1
C750	D-17
C1001	B-10
C1002	B-9
C1003	B-7
C1004	B-12
C1005	B-12
C1006	B-12
C1007	B-9
C1008	A-8
C1009	A-12
C1010	A-12
C1011	A-12
C1012	A-11
C1013	B-7
C1014	B-12
C1015	C-7
C1016	C-8
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Resistor

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R205	F-1
R207	E-18
R208	E-3
R209	E-3
R210	E-16
R211	E-16
R213	E-3
R214	F-4
R215	D-2
R216	D-2
R217	E-3
R219	E-3
R220	F-3
R223	D-3
R224	E-3
R225	F-2
R226	E-18
R227	E-18
R228	E-18
R231	E-18
R232	E-2
R233	F-2
R234	E-2
R236	F-16
R237	F-17
R238	F-17
R239	F-16
R241	F-3
R242	E-13
R243	F-3
R244	F-3
R245	F-3
R246	F-3
R247	F-3
R249	F-3
R250	F-3
R251	F-3
R252	F-3
R253	F-3
R254	D-16
R255	E-3
R256	E-3
R257	F-3
R258	F-15
R260	E-16
R261	D-2
R262	F-18
R263	E-17
R264	E-17
R265	E-17
R266	E-17
R267	F-18
R268	E-18
R269	E-17
R270	E-17
R271	F-1
R272	F-17
R273	F-17
R274	F-2
R275	F-16
R276	F-5
R277	F-5
R278	F-18
R279	E-2
R282	E-3
R285	E-17
R286	E-17
R287	F-17
R288	F-17
R290	E-17
R291	E-17
R292	F-17
R293	F-17
R298	F-3
R299	F-3
R301	E-15
R302	F-6
R304	E-6
R305	F-5
R306	D-14
R307	D-14
R308	E-4
R309	E-3
R310	E-4
R311	E-4
R312	D-6
R313	D-6
R314	D-5
R315	D-5
R316	D-5
R317	E-5
R318	F-6
R319	F-6
R320	D-13
R321	D-5
R322	D-5
R323	D-4
R324	F-6
R325	D-4
R326	E-15
R327	D-4
R328	D-4
R329	D-4
R330	D-5
R331	D-6
R332	D-6
R333	D-14
R334	E-15
R335	E-15
R336	D-6
R337	D-4
R338	D-4
R339	D-4
R340	D-4
R341	D-4
R342	D-4
R343	F-6
R344	D-4
R345	D-4
R346	E-14
R347	E-14
R348	F-14
R349	F-14
R350	D-6
R351	D-6
R352	D-6
R353	D-6
R354	D-6
R355	D-6
R356	C-3
R357	C-3
R358	E-14
R359	E-6
R360	D-13
R361	E-15
R362	E-15
R363	F-15
R371	D-6
R372	D-6
R373	D-5
R374	D-5
R702	C-17
R703	D-18
R704	C-17
R705	C-17
R716	D-2
R717	D-2
R718	D-2
R719	D-2
R720	D-2
R721	D-3
R722	D-3
R723	D-3
R724	C-2
R725	C-1
R726	C-2
R727	C-2
R728	C-2
R729	D-2
R730	C-2
R731	C-2
R732	C-2
R733	C-2
R734	D-3
R735	D-3
R736	C-2
R737	D-2
R738	C-2
R739	C-2
R740	C-3
R741	D-16
R742	D-16
R743	C-17
R744	D-16
R745	C-16
R746	D-17
R747	C-16
R748	C-17
R749	C-17
R750	D-17
R752	D-17
R756	D-1
R757	D-16
R758	D-16
R760	D-1
R761	C-3
R764	C-1
R777	D-17
R778	D-17
R779	D-17
R781	C-2
R782	C-2
R1001	B-12
R1002	B-12
R1003	C-12
R1004	C-12
R1005	A-12
R1006	A-11
R1007	A-11
R1008	B-11
R1009	B-12
R1010	C-11
R1012	B-13
R1013	B-13
R1014	B-13
R1015	B-13
R1016	B-12
R1017	B-12
R1018	B-13
R1019	B-12
R1020	B-12
R1021	B-12
R1022	A-12
R1023	A-12
R1024	B-13
R1025	B-12
R1026	C-12
R1027	C-12
R1028	C-11
R1029	C-11
R1033	B-10
R1035	B-11
R1038	B-12
R1039	A-11
R1040	B-11
R1051	C-13
R1052	C-13
R1062	C-8
R1063	C-10
R1065	B-11
R1071	B-12
R1072	B-12
R1073	B-12
R1080	C-9
R3001	A-13
R3002	A-6
R3003	A-6
R3004	C-5
R3005	B-14
R3007	B-14
R3008	B-14
R3009	B-14
R3010	B-14
R3015	C-15
R3016	C-15
R3017	C-15
R3018	C-15
R3019	C-15
R3021	C-14
R3022	B-14
R3023	C-14
R3024	C-14
R3025	C-14
R3026	D-14
R3027	C-14
R3028	C-15
R3029	B-14
R3032	B-13
R3035	B-13
R3036	B-13
R3037	B-14
R3038	B-13
R3040	B-13
R3050	B-13
R3051	C-15
R3057	D-14
R3058	C-14
R3059	C-15
R3060	C-4
R3062	C-4
R3063	C-4
R3064	C-4
R3071	B-6
R3072	B-6
R3073	C-12
R3074	C-12
R3081	B-13
R3082	A-13
R3086	A-13
R3090	C-15
R3091	A-13
R3238	C-13
R3240	D-13
R3241	D-13
R3242	D-13
R3243	D-14
R4001	C-17
R4002	C-17
R4003	C-17
R4004	C-17
R4005	B-17
R4006	C-17
R4007	C-17
R4009	C-17
R4010	B-2
R4012	B-17
R4015	C-17
R4016	C-18
R4017	C-1
R4018	C-2
R4019	C-16
R4020	C-2
R4021	C-1
R4022	C-2
R4023	C-2
R4024	C-1
R4025	C-17
R4026	B-17
R4027	B-17
R4028	B-17
R4029	C-1
R4501	B-2
R4502	B-2
R4503	C-1
R4504	B-2
R4505	B-2
R4506	B-2
R4507	C-2
R4508	A-17
R4509	A-17
R4510	B-2
R4511	B-1
R4512	A-3
R4513	A-1
R4514	A-17
R4516	A-17
R4517	A-17
R4518	A-17
R4519	A-17
R4520	A-17
R4521	A-17
R4524	A-17
R4525	A-17
R4526	C-16
R4527	C-16
R4528	C-16
R4529	C-16
R4530	C-16
R4531	C-16
R4532	A-18
R4537	B-2
R4538	A-1
R4541	A-2
R4542	A-2
R4543	A-1
R4544	A-2
R4545	A-2
R4546	A-2
R4547	B-17
R4548	C-16
R4549	B-16
R4550	C-16
R4551	C-17
R4552	C-17
R4553	A-2
R4554	B-2
R5001	C-3
R5002	C-3
R5003	B-3
R5005	B-3
R5006	B-3
R5007	B-4
R5008	B-4
R5011	A-3
R5013	B-16
R5014	B-4
R5015	B-4
R5016	B-4
R5024	B-14
R5025	A-14
R5026	A-14
R5027	A-14
R5028	B-14
R5029	A-16
R5030	B-4
R5033	C-16
R5055	C-16
R5056	C-4
R5070	C-3
R5071	C-3
R5100	B-16
R5501	A-13
R5502	A-13
R5503	B-5
R5504	C-5
R5505	C-5
R5507	B-14
R5510	C-4
R5511	C-3
R5512	C-4
R5513	C-3
R5514	C-4
R5515	C-3
R5516	C-3
R5517	C-3
R5518	C-3
R5520	C-16
R5521	C-16
R5526	B-6
R5527	B-6
R5528	B-6
R5529	B-6
R5530	C-6
R5531	C-6
R5532	C-6
R5533	C-6
R5534	C-6
R5537	B-13
R5540	C-14
R5541	C-14
R5543	C-13
R5544	B-13
R5546	B-13
R5547	B-13
R5548	B-13
R5549	B-13
R5550	B-13
R5551	B-13
R5552	D-3
R5553	D-3
R5554	B-13
R5556	C-13
R6003	C-8
R6004	C-8
R6005	D-11
R6006	D-9
R6007	D-12
R6008	D-13
R6009	C-13
R6010	C-12
R6011	E-12
R6012	E-11
R6013	F-12
R6014	F-13
R6015	F-12
R6016	F-12
R6017	F-12
R6018	F-12
R6019	F-12
R6020	F-13
R6021	E-10
R6022	E-10
R6023	E-10
R6024	D-9
R6025	E-9
R6026	F-12
R6027	F-6
R6028	F-12
R6029	D-7
R6030	F-6
R6031	D-7
R6032	C-6
R6033	D-7
R6034	E-13
R6035	D-7
R6036	D-12
R6037	C-13
R6038	D-13
R6039	D-9
R6040	E-12
R6042	C-11
R6043	C-8
R6044	C-10
R6045	C-10
R6046	D-13
R6048	E-8
R6049	E-8
R6050	E-12
R6052	D-7
R6053	D-11
R6054	E-8
R6055	E-12
R6056	E-7
R6057	D-12
R6058	E-8
R6059	E-8
R6060	E-8
R6061	E-12
R6062	D-12
R6063	E-12
R6064	D-12
R6066	E-13
R6067	D-8
R6068	C-7
R6069	F-6
R6070	E-13
R6071	D-6
R6072	F-6
R6073	D-6
R6074	D-6
R6075	E-6
R6076	D-6
R6078	C-7
R6080	C-11
R6090	E-7
R6091	E-7
R6108	C-10
R6109	E-10
R6111	C-8
R6112	C-11
R6113	D-7
R6120	D-10
R6121	C-10
R6130	E-7
R6131	D-7
R6133	F-8
R6134	E-12
R6135	D-7
R6137	C-8
R6138	E-12
R6139	E-8
R6142	C-10
R6143	C-10
R6144	C-10
R6145	C-10
R6150	E-6
R6151	E-9
R6152	E-8
R6153	E-8
R6154	E-12
R6155	D-8
R6161	D-8
R6170	E-12
R6171	E-7
R6174	D-12
R6175	E-7
R6199	E-12
R6201	E-8
R6203	E-12
R6205	E-8
R6206	D-9
R6207	D-9
R6208	D-8
R6209	D-8
R6210	D-8
R6211	D-10
R6212	D-10
R6213	D-10
R6214	C-10
R6231	C-9
R6233	E-8
R6234	E-8
R6235	C-3
R6309	D-12

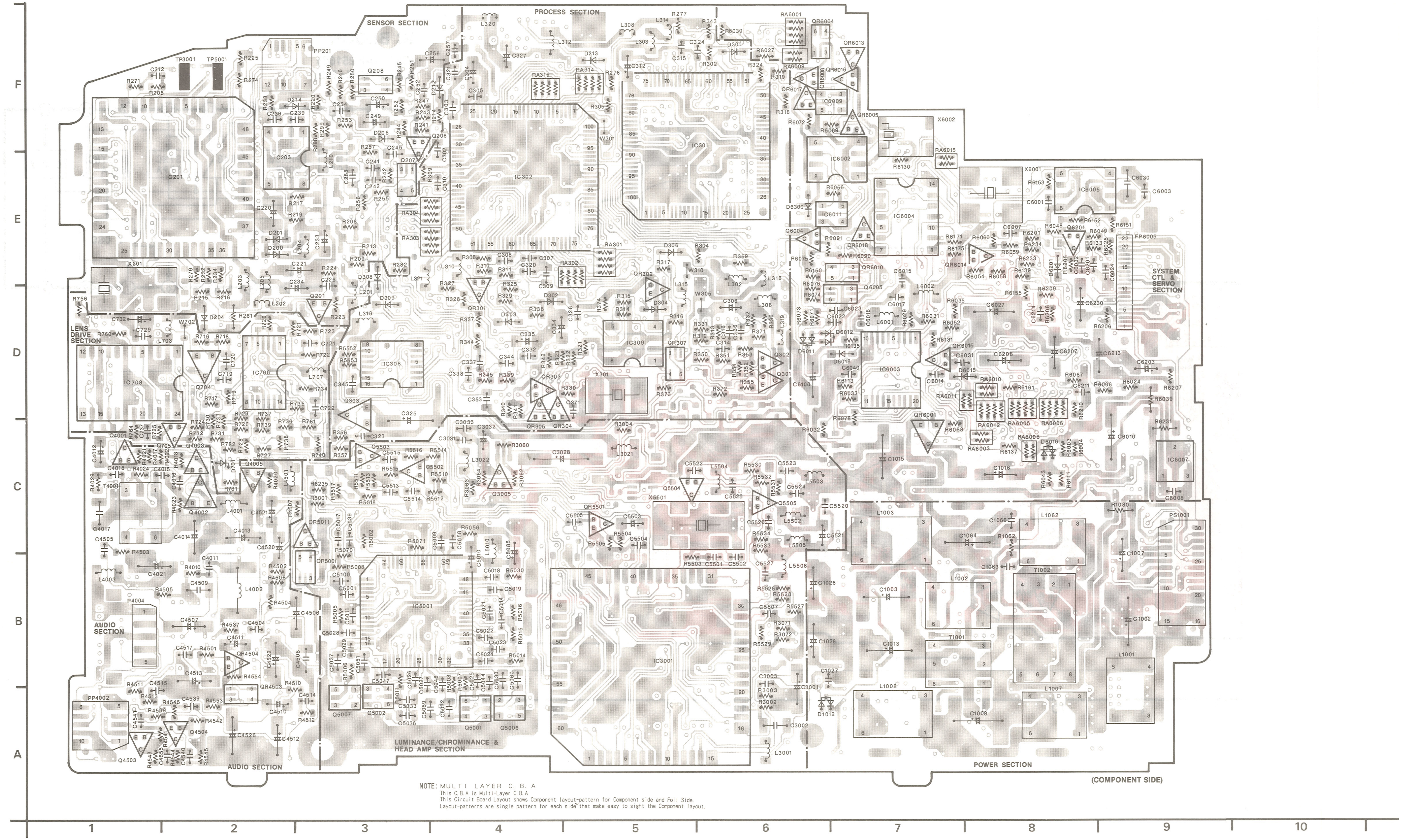
Resistor Array

RA301	E-5
RA302	E-5
RA303	E-3
RA304	E-3
RA305	D-14
RA306	D-14
RA308	F-13
RA309	E-13
RA310	E-13
RA311	E-13
RA312	E-14
RA314	F-5
RA315	F-4
RA6001	F-6
RA6003	C-8
RA6004	C-11
RA6005	C-8
RA6006	C-8
RA6007	C-11
RA6008	C-8
RA6009	F-6
RA6010	D-8
RA6011	D-7
RA6012	C-8
RA6014	E-10
RA6015	E-7

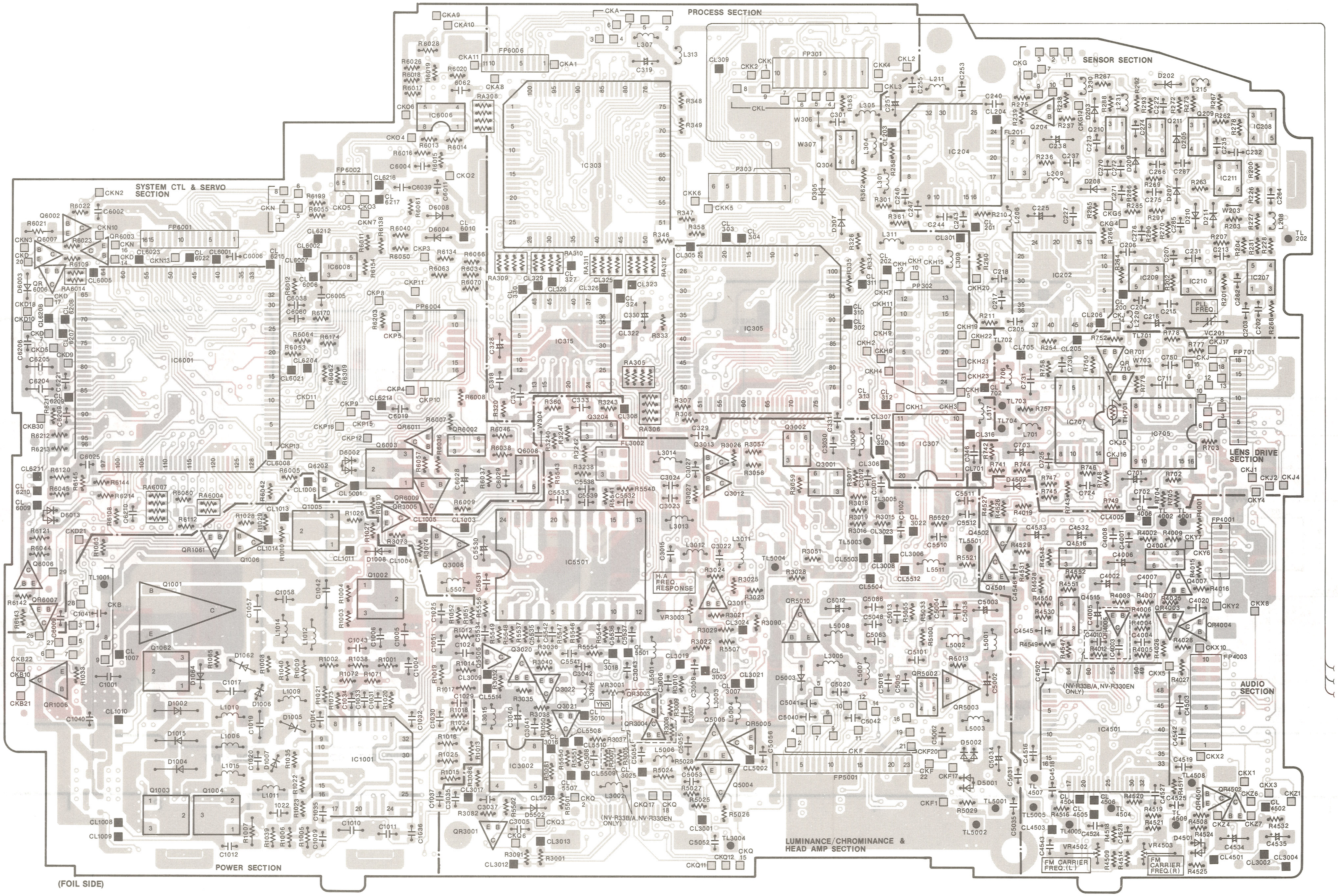
Wire

W203	E-18
W301	F-5
W304	D-13
W305	D-6
W306	F-15
W307	F-15
W310	E-5
W702	D-2
W703	D-17

3-22. MAIN C.B.A. (VEP23251A: NV-R33E) (VEP23251B: NV-R33B/A, NV-R330EN)

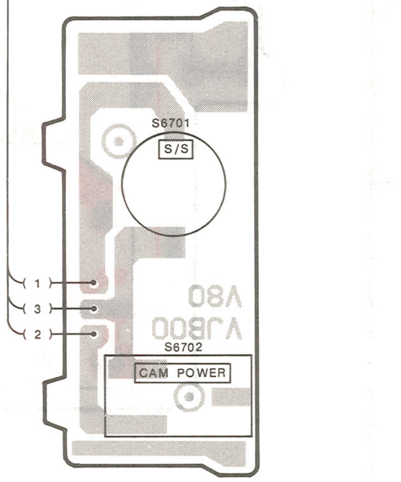

SENSOR SECTION
PROCESS SECTION
LENS DRIVE SECTION
SYSTEM CTL & SERVO SECTION
AUDIO SECTION
LUMINANCE/CHROMINANCE & HEAD AMP SECTION
POWER SECTION
(COMPONENT SIDE)
IC201
IC203
IC302
IC301
IC6002
IC6005
IC6004
IC6011
IC6009
IC708
IC706
IC308
IC309
IC6003
IC6007
IC5001
IC3001
X201
X301
X5501
X6001
X6002
T1001
T1002
T4001
L1001
L1002
L1003
L1007
L1008
L1062
PS1001
P4004
PP4002
PP201
A
B
C
D
E
F
1
2
3
4
5
6
7
8
9
10

NOTE: MULTI LAYER C. B. A
This C.B.A is Multi-Layer C.B.A
This Circuit Board Layout shows Component layout-pattern for Component side and Foil Side.
Layout-patterns are single pattern for each side that make easy to sight the Component layout.

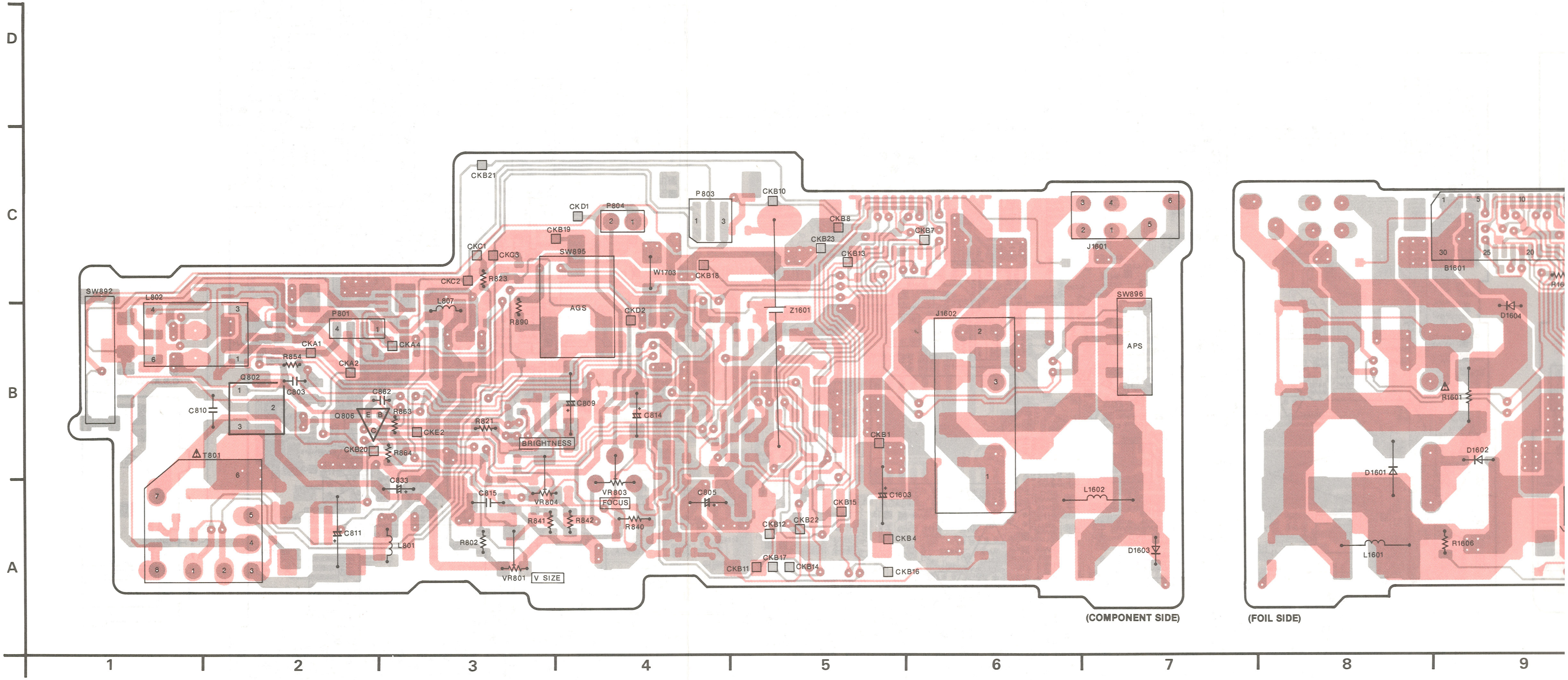

PROCESS SECTION
SENSOR SECTION
SYSTEM CTL & SERVO SECTION
LENS DRIVE SECTION
AUDIO SECTION
POWER SECTION
LUMINANCE/CHROMINANCE & HEAD AMP SECTION
H.A FREQ. RESPONSE
PLL FREQ.
FM CARRIER FREQ.(L)
FM CARRIER FREQ.(R)
YNR
(NV-R33B/A, NV-R330EN ONLY)
IC6001
IC303
IC305
IC315
IC5501
IC1001
IC204
IC202
IC4501
10
11
12
13
14
15
16
17
18
19

(FOIL SIDE)

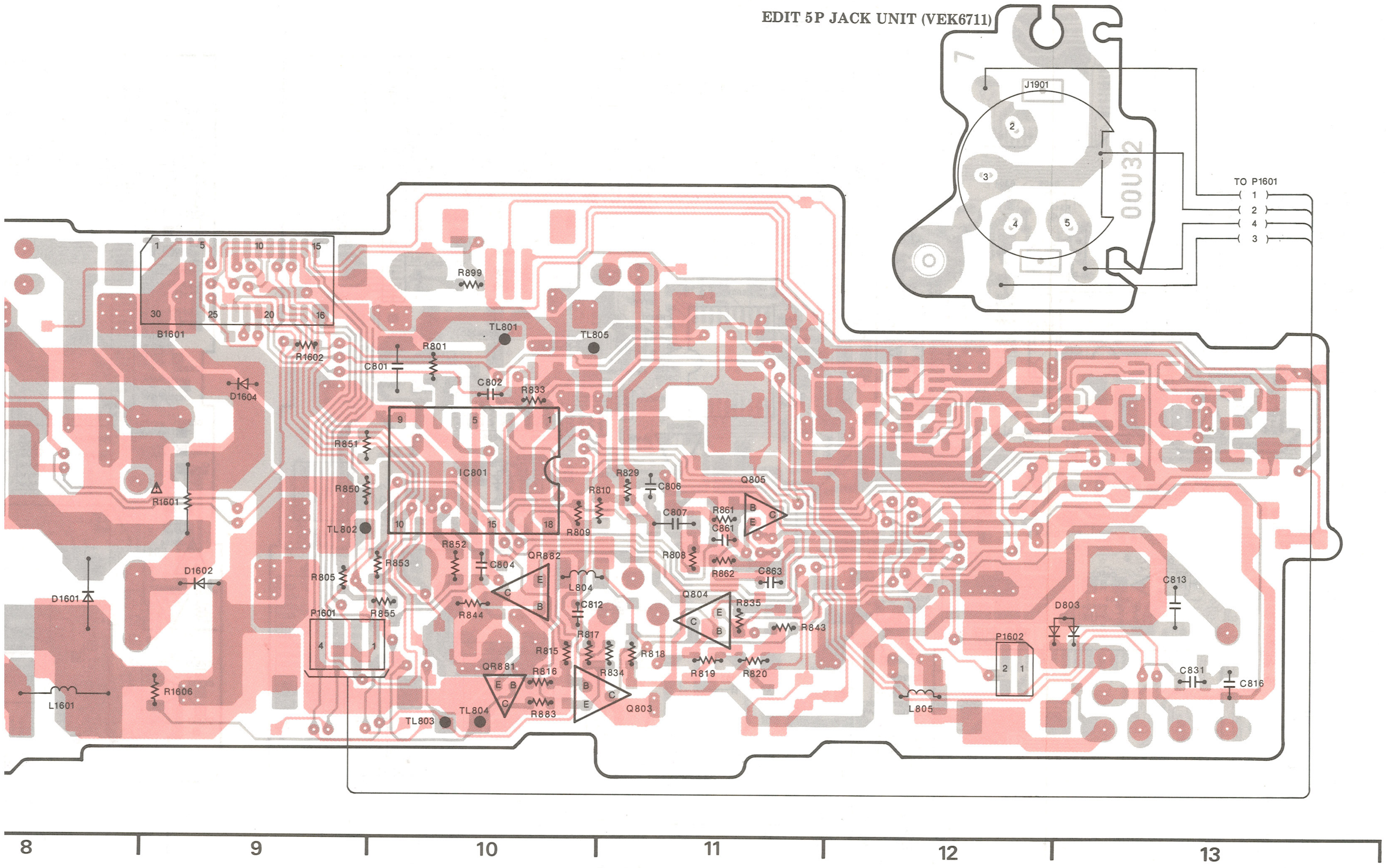
S/S & POWER SW C.B.A. (VEP00V80A)


S6701
S/S
S6702
CAM POWER
1
3
2

3-23. EVF C.B.A. (VEP28106C)

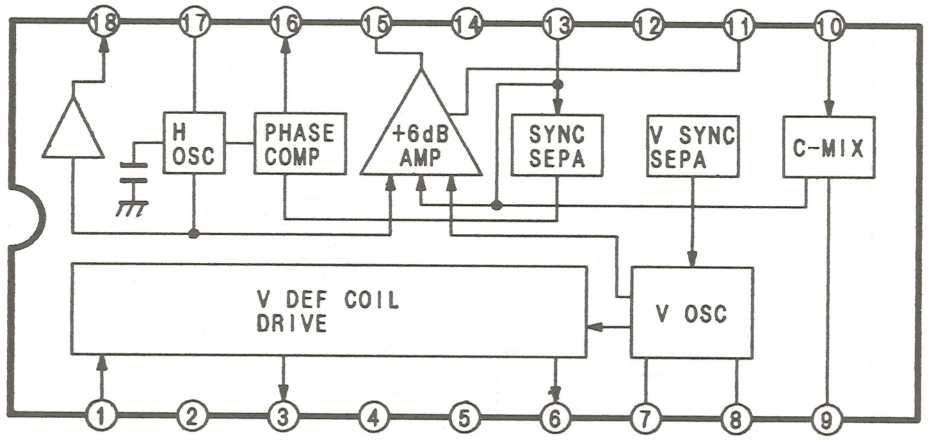

D
C
B
A
1
2
3
4
5
6
7
8
9
CKB21
CKD1
P804
P803
CKB10
CKB8
CKB23
CKB7
CKB13
J1601
CKB19
CKC1
CKC3
SW895
CKC2
R823
W1703
CKB18
SW892
L802
P801
L807
R890
AGS
CKD2
Z1601
J1602
SW896
APS
CKA1
CKA4
R854
CKA2
Q802
C803
C810
C862
R863
Q806
CKE2
C809
C814
R821
BRIGHTNESS
CKB1
CKB20
R864
T801
C833
C815
VR804
VR803
FOCUS
C805
CKB15
C1603
L1602
C811
L801
R841
R842
R840
CKB12
CKB22
CKB4
R802
CKB17
CKB11
CKB14
CKB16
D1603
VR801
V SIZE
(COMPONENT SIDE)
B1601
D1604
R1601
D1602
D1601
L1601
R1606
(FOIL SIDE)

Back Page:
MAIN C.B.A. Section


EDIT 5P JACK UNIT (VEK6711)
J1901
00U32
TO P1601
B1601
R1602
D1604
R1601
D1602
D1601
L1601
R1606
R899
TL801
TL805
R801
C801
C802
R833
R851
R850
TL802
IC801
R829
C806
R810
R809
C807
R861
C861
Q805
R808
R862
C863
R852
C804
QR882
R853
R805
P1601
R855
R844
L804
C812
Q804
R835
R843
R817
R815
R816
R834
R818
R819
R820
QR881
TL803
TL804
R883
Q803
D803
P1602
C813
L805
C831
C816
8
9
10
11
12
13

IC BLOCK

IC801 (AN2516S)
(LOCATION: B-2)


H OSC
PHASE COMP
+6dB AMP
SYNC SEPA
V SYNC SEPA
C-MIX
V DEF COIL DRIVE
V OSC
18
17
16
15
14
13
12
11
10
1
2
3
4
5
6
7
8
9

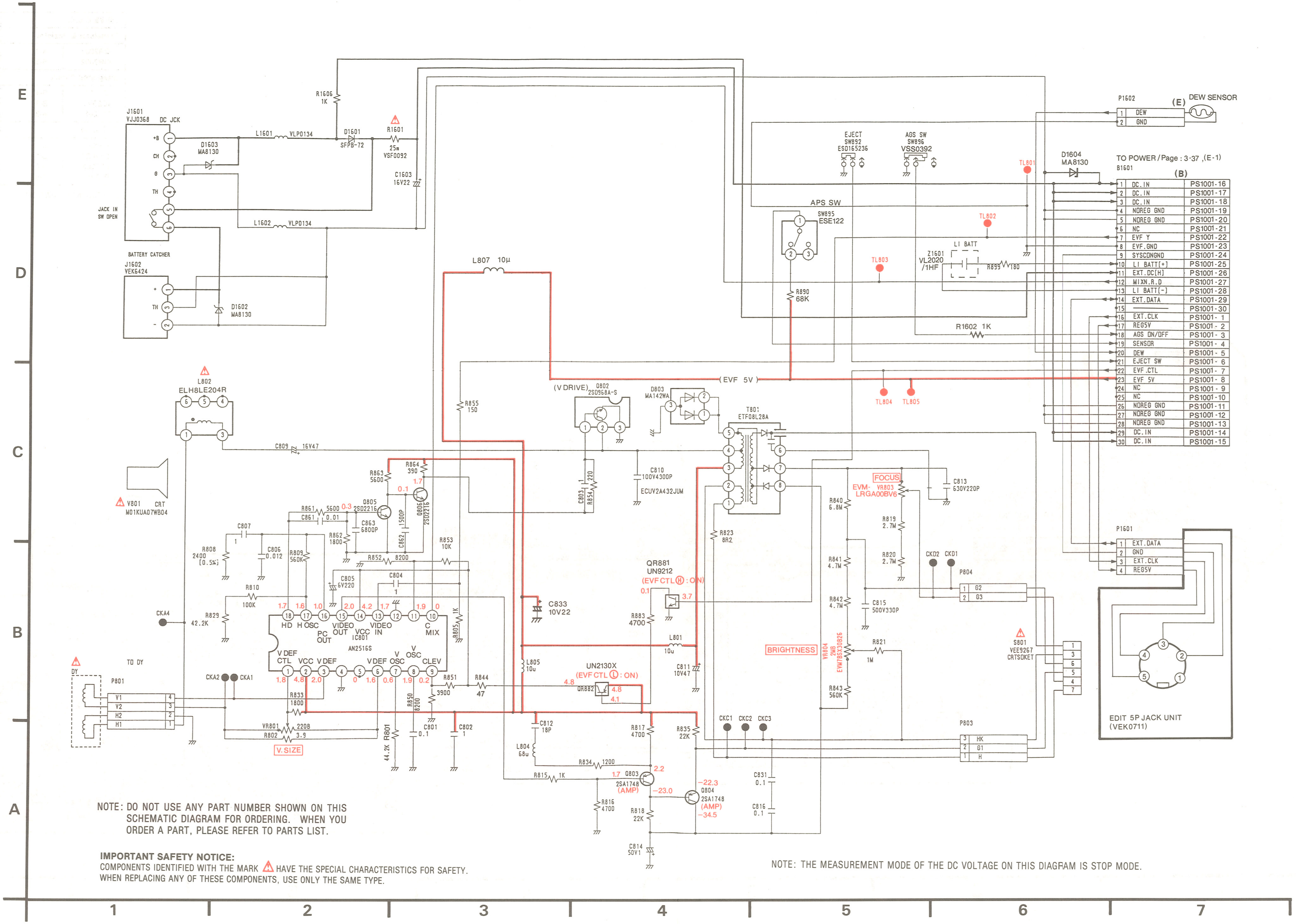
EVF C.B.A.

Integrated Circuit	
IC801	B-10
Transistor	
Q802	B-2
Q803	A-11
Q804	A-11
Q805	B-11
Q1701	B-13
Q1702	C-13
Q1703	B-12
Q1704	C-12
Transistor & Resistor	
QR881	A-10
QR882	A-10
QR1701	C-13

Test Point	
TL801	C-10
TL802	B-10
TL803	A-10
TL804	A-10
TL805	C-11
Adjustment	
VR801	A-3
VR803	B-4
VR804	B-3
Connector	
B1601	C-9
P801	C-2
P803	C-4
P804	C-5
P1601	A-9
P1602	A-12

ADDRESS INFORMATION

3-24. EVF SCHEMATIC DIAGRAM



E
D
C
B
A
1
2
3
4
5
6
7
J1601 VJJ0368 DC JCK
+B
CH
θ
TH
JACK IN SW OPEN
D1603 MA8130
L1601 VLP0134
L1602 VLP0134
R1606 1K
D1601 SFPB-72
R1601 25m VSF0092
C1603 16V22
BATTERY CATCHER
J1602 VEK6424
D1602 MA8130
L802 ELH8LE204R
V801 CRT M01KUA07WB04
C809 16V47
L807 10μ
R855 150
(V DRIVE) Q802 2SD968A-S
D803 MA142WA
T801 ETF08L28A
C810 100V4300P ECUV2A432JUM
C803 R854 220
EVF 5V
EJECT SW892 ESD16523G
AGS SW SW896 VSS0392
APS SW SW895 ESE122
R890 68K
Z1601 VL2020 /1HF
LI BATT
R899 180
R1602 1K
TL801
TL802
TL803
TL804
TL805
D1604 MA8130
P1602
(E)
DEW SENSOR
DEW
GND
TO POWER / Page : 3-37 ,(E-1)
B1601
(B)
1 DC.IN PS1001-16
2 DC.IN PS1001-17
3 DC.IN PS1001-18
4 NOREG GND PS1001-19
5 NOREG GND PS1001-20
6 NC PS1001-21
7 EVF Y PS1001-22
8 EVF.GND PS1001-23
9 SYSCONGND PS1001-24
10 LI BATT[+] PS1001-25
11 EXT.DC[H] PS1001-26
12 MIXN.R.D PS1001-27
13 LI BATT[-] PS1001-28
14 EXT.DATA PS1001-29
15 PS1001-30
16 EXT.CLK PS1001-1
17 REG5V PS1001-2
18 AGS ON/OFF PS1001-3
19 SENSOR PS1001-4
20 DEW PS1001-5
21 EJECT SW PS1001-6
22 EVF.CTL PS1001-7
23 EVF 5V PS1001-8
24 NC PS1001-9
25 NC PS1001-10
26 NOREG GND PS1001-11
27 NOREG GND PS1001-12
28 NOREG GND PS1001-13
29 DC.IN PS1001-14
30 DC.IN PS1001-15
C813 630V220P
FOCUS EVM- VR803 LRGA00BV6
R840 6.8M
R819 2.7M
R820 2.7M
R841 4.7M
R842 4.7M
C815 500V330P
R821 1M
R843 560K
BRIGHTNESS VR804 EVM7BSX50B26
CKD2 CKD1
P804
G2
G3
S801 VEE9267 CRTSOCKET
P1601
EXT.DATA
GND
EXT.CLK
REG5V
EDIT 5P JACK UNIT (VEK0711)
P803
HK
G1
H
CKC1 CKC2 CKC3
C831 0.1
C816 0.1
Q804 2SA1748 (AMP) -22.3 -34.5
Q803 2SA1748 (AMP) 2.2 -23.0 1.7
R818 22K
R835 22K
R817 4700
R816 4700
R834 1200
R815 1K
C814 50V1
L804 68u
C812 18P
QR881 UN9212 (EVF CTL H : ON) 0.1 3.7
R883 4700
L801 10u
C811 10V47
UN2130X (EVF CTL L : ON) QR882 4.8 4.8 4.1
R823 8R2
C833 10V22
L805 10u
R844 47
R851 3900
IC801 AN2516S
HD H OSC VIDEO OUT VIDEO IN PC OUT VCC C MIX
V DEF CTL VCC V DEF V DEF OSC V OSC CLEV
1.7 1.6 1.0 2.0 4.2 1.7 1.9 0
1.8 4.8 2.0 0 1.6 0.6 1.9 0.2
R863 5600
R864 390
Q805 2SD2216
Q806 2SD2216
R861 5600 0.3
C861 0.01
C863 6800P
C862 1500P
R852 1800
R852 8200
R853 10K
C807
R808 2400 [0.5%]
C806 0.012
R809 560K
R810 100K
C805 6V220
C804
R805 1K
R829 42.2K
CKA4
CKA2 CKA1
R833 1800
VR801 220B
R802 3.9
V.SIZE
R801 44.2K
R850 8200
C801 0.1
C802 1
DY
TO DY
P801
V1
V2
H2
H1

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

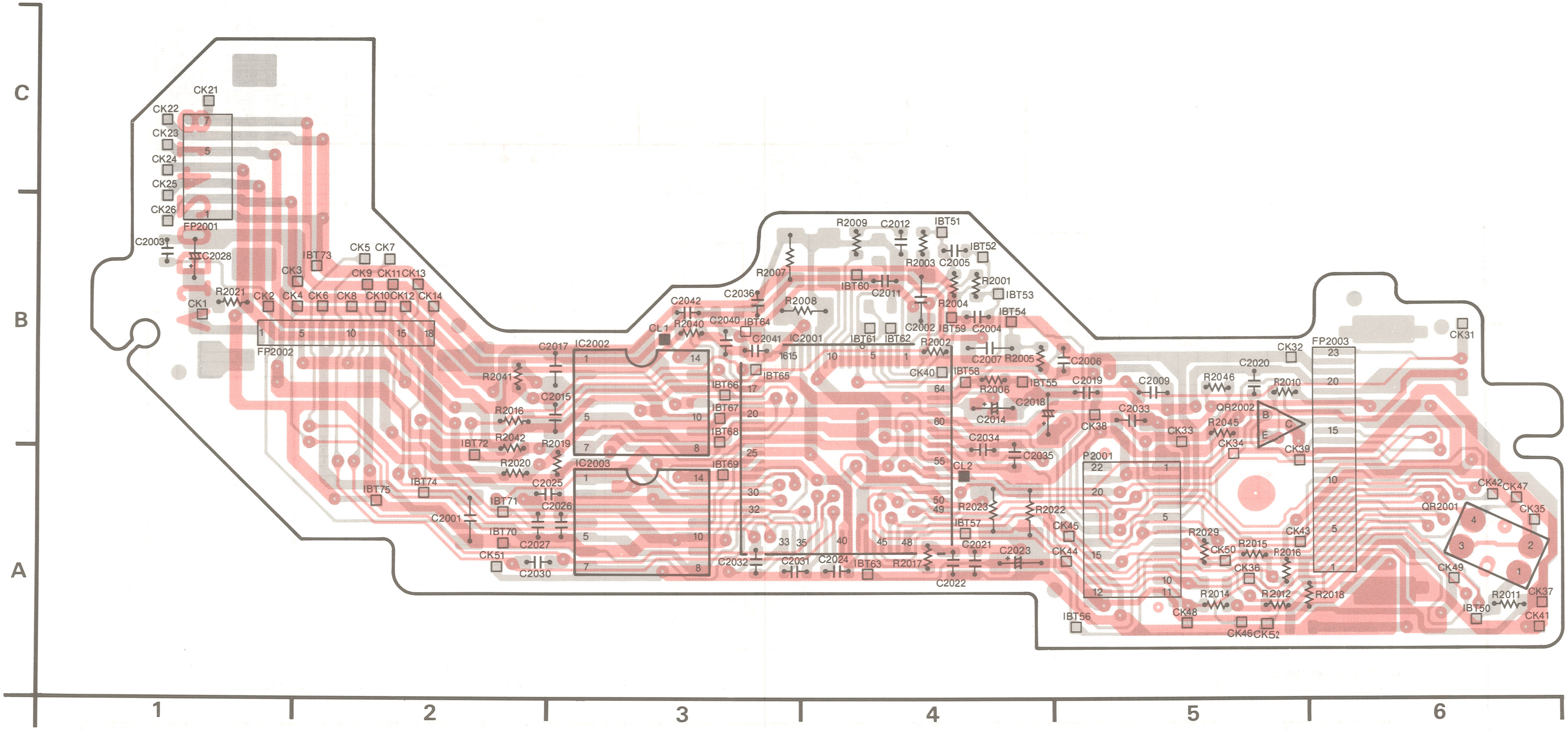
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

3-25. DRIVE C.B.A. (VEP02418A)

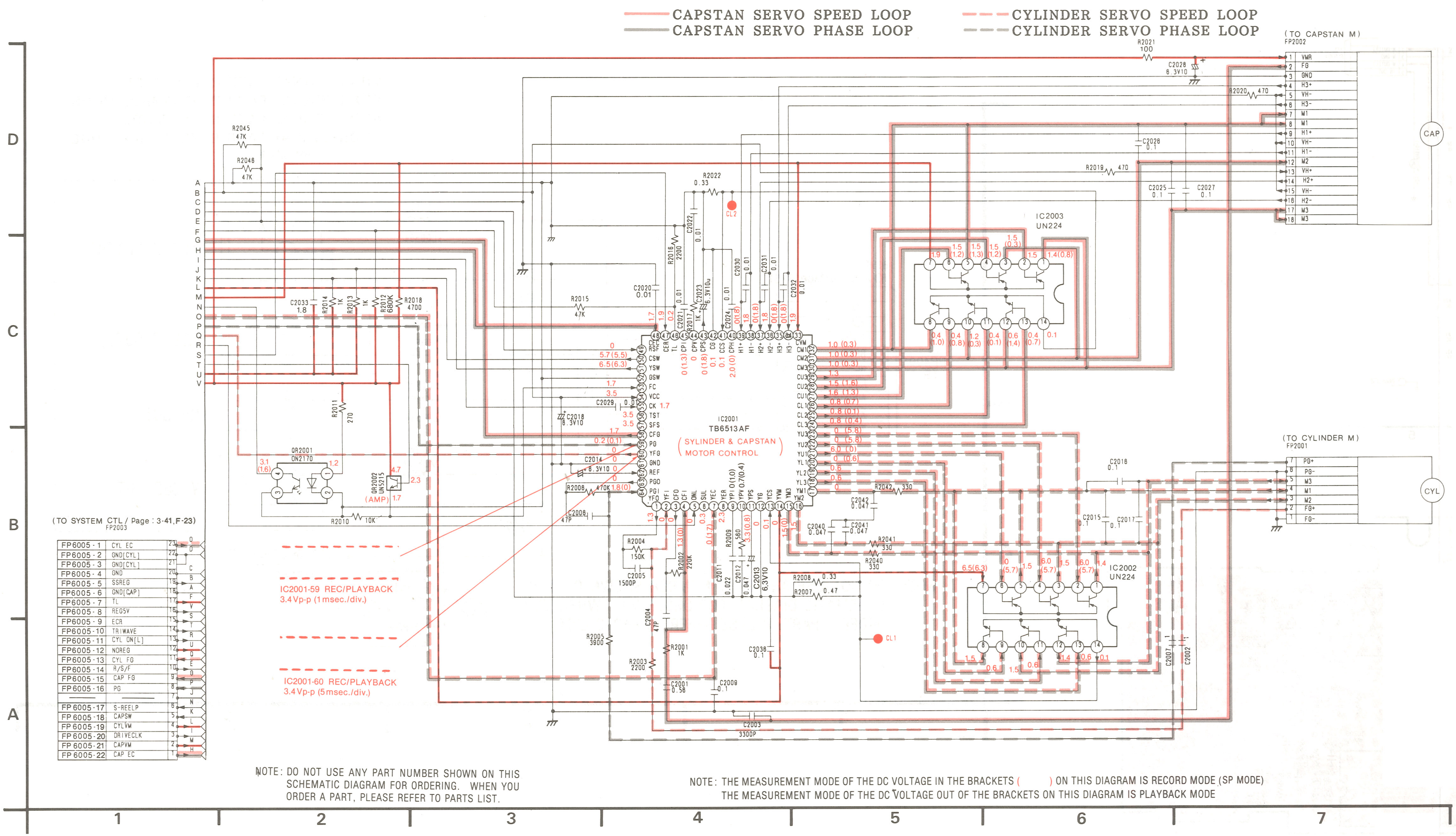
DRIVE C.B.A.	
Transistor & Resistor	
QR2001 QR2002	A-6 B-5
Integrated Circuit	
IC2001 IC2002 IC2003	B-4 B-3 A-3
Connector	
FP2001 FP2002 FP2003 P2001	B-1 B-1 B-6 A-5

ADDRESS INFORMATION


C
B
A
1
2
3
4
5
6
CK21
CK22
CK23
CK24
CK25
CK26
FP2001
C2003
C2028
CK1
R2021
CK2
CK3
CK4
CK6
CK8
CK10
CK12
CK14
CK5
CK7
CK9
CK11
CK13
IBT73
FP2002
C2017
IC2002
R2041
C2015
R2016
R2042
R2019
R2020
IBT72
IBT74
IBT75
IC2003
C2025
C2026
IBT71
C2001
IBT70
C2027
CK51
C2030
C2042
CL1
R2040
C2040
C2036
IBT64
C2041
IC2001
IBT65
IBT66
IBT67
IBT68
IBT69
C2032
C2031
C2024
IBT63
R2017
R2007
R2008
R2009
C2012
IBT51
IBT52
R2003
C2005
IBT60
C2011
R2001
IBT53
R2004
IBT54
C2002
IBT59
C2004
IBT61
IBT62
R2002
C2007
R2005
C2006
CK40
IBT58
R2006
IBT55
C2018
C2019
C2014
C2034
C2035
CL2
R2023
R2022
IBT57
C2021
C2023
C2022
CK44
CK45
IBT56
P2001
CK38
C2033
C2009
CK33
R2046
C2020
R2010
QR2002
R2045
CK34
CK32
FP2003
CK39
CK31
R2029
CK50
R2015
R2016
CK43
CK36
R2014
R2012
R2018
CK48
CK46
CK52
QR2001
CK42
CK47
CK35
CK49
R2011
IBT50
CK37
CK41

Back Page:
EVF Section

3-26. DRIVE SCHEMATIC DIAGRAM

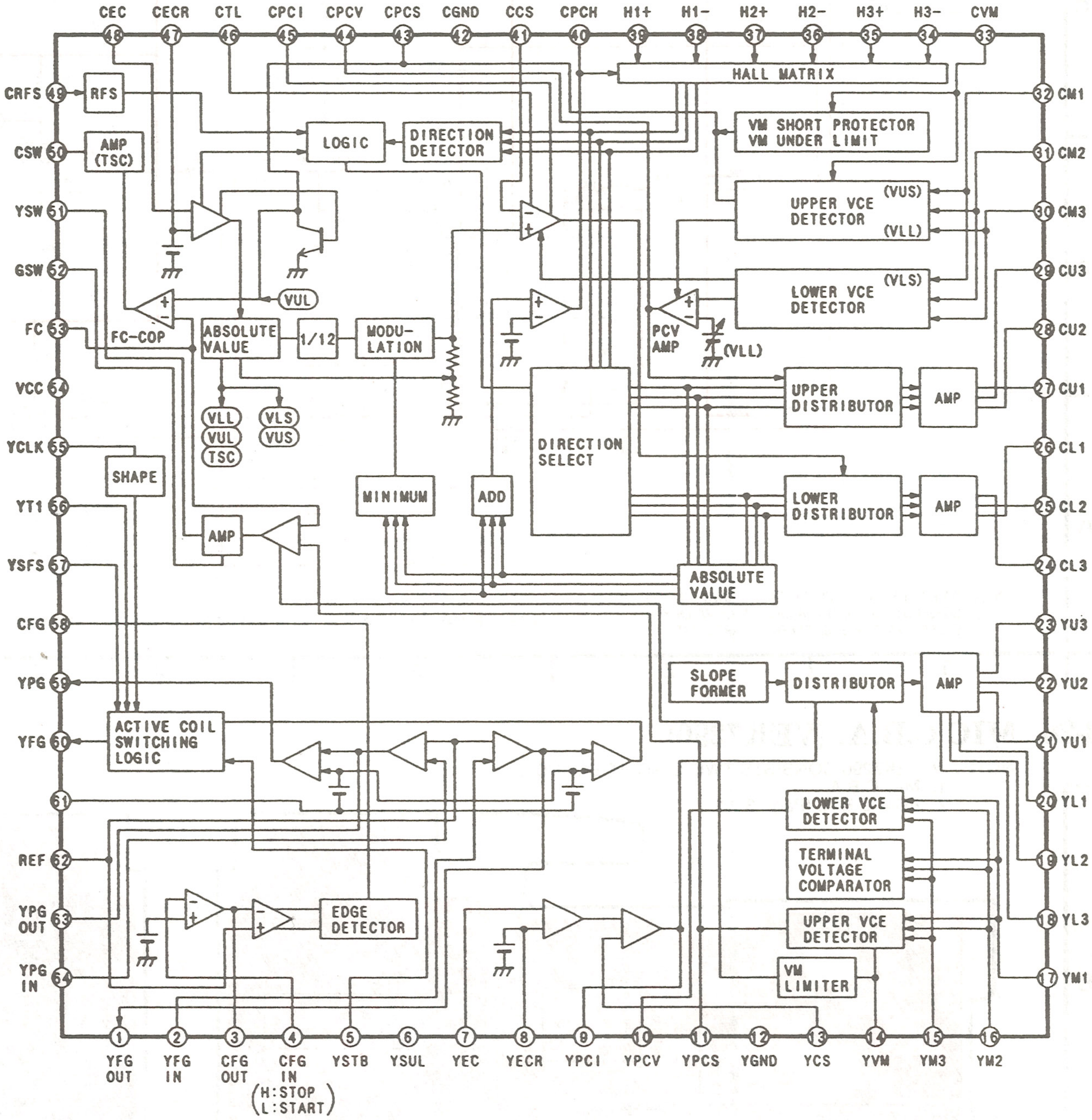

CAPSTAN SERVO SPEED LOOP
CAPSTAN SERVO PHASE LOOP
CYLINDER SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP
(TO CAPSTAN M)
FP2002
1 VMR
2 FG
3 GND
4 H3+
5 VH-
6 H3-
7 M1
8 M1
9 H1+
10 VH-
11 H1-
12 M2
13 VH+
14 H2+
15 VH-
16 H2-
17 M3
18 M3
CAP
(TO CYLINDER M)
FP2001
7 PG+
6 PG-
5 M3
4 M1
3 M2
2 FG+
1 FG-
CYL
(TO SYSTEM CTL / Page : 3-41, F-23)
FP2003
FP6005 - 1 CYL EC 23
FP6005 - 2 GND[CYL] 22
FP6005 - 3 GND[CYL] 21
FP6005 - 4 GND 20
FP6005 - 5 SSREG 19
FP6005 - 6 GND[CAP] 18
FP6005 - 7 TL 17
FP6005 - 8 REG5V 16
FP6005 - 9 ECR 15
FP6005 - 10 TRIWAVE 14
FP6005 - 11 CYL ON[L] 13
FP6005 - 12 NOREG 12
FP6005 - 13 CYL FG 11
FP6005 - 14 R/S/F 10
FP6005 - 15 CAP FG 9
FP6005 - 16 PG 8
7
FP6005 - 17 S-REELP 6
FP6005 - 18 CAPSW 5
FP6005 - 19 CYLVM 4
FP6005 - 20 DRIVECLK 3
FP6005 - 21 CAPVM 2
FP6005 - 22 CAP EC 1
IC2001
TB6513AF
(SYLINDER & CAPSTAN MOTOR CONTROL)
CEC RSF CSW YSW GSW FC VCC CK TST SFS CFG PG YFG GND REF PGO PGI YFO
CER TL CPI CPV CPS CG CCS CPH H1+ H1- H2+ H2- H3+ H3- CVM
CM1 CM2 CM3 CU3 CU2 CU1 CL1 CL2 CL3 YU3 YU2 YU1 YL1 YL2 YL3 YM1 YM2
YFI CFO CFI ONL SUL YEC YER YPI YPV YPS Y6 YCS YVM YM3
IC2003
UN224
IC2002
UN224
QR2001
UN2170
QR2002
UN5215
(AMP)
CL1
CL2
R2021 100
C2028 6.3V10
R2020 470
C2026 0.1
R2019 470
C2025 0.1
C2027 0.1
R2045 47K
R2046 47K
R2022 0.33
R2016 2200
C2022 0.01
C2030 0.01
C2031 0.01
C2032 0.01
C2020 0.01
C2021 0.01
R2017 1K
C2023 6.3V10u
C2024 0.01
R2015 47K
C2033 1.8
R2014 1K
R2013 1K
R2012 680K
R2018 4700
R2011 270
C2029 0.01
C2018 6.3V10
C2014 6.3V10
R2006 470K
C2008 47P
R2010 10K
R2004 150K
C2005 1500P
R2002 220K
R2009 560
C2011 0.022
C2012 0.047
C2013 6.3V10
C2004 47P
R2005 3900
R2001 1K
R2003 2200
C2001 0.58
C2009 0.1
C2003 3300P
C2038 0.1
R2008 0.33
R2007 0.47
C2042 0.047
C2040 0.047
C2041 0.047
R2042 330
R2041 330
R2040 330
C2016 0.1
C2015 0.1
C2017 0.1
C2007
C2002
IC2001-59 REC/PLAYBACK
3.4Vp-p (1msec./div.)
IC2001-60 REC/PLAYBACK
3.4Vp-p (5msec./div.)
A B C D E F G H I J K L M N O P Q R S T U V
D
C
B
A
1
2
3
4
5
6
7

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE

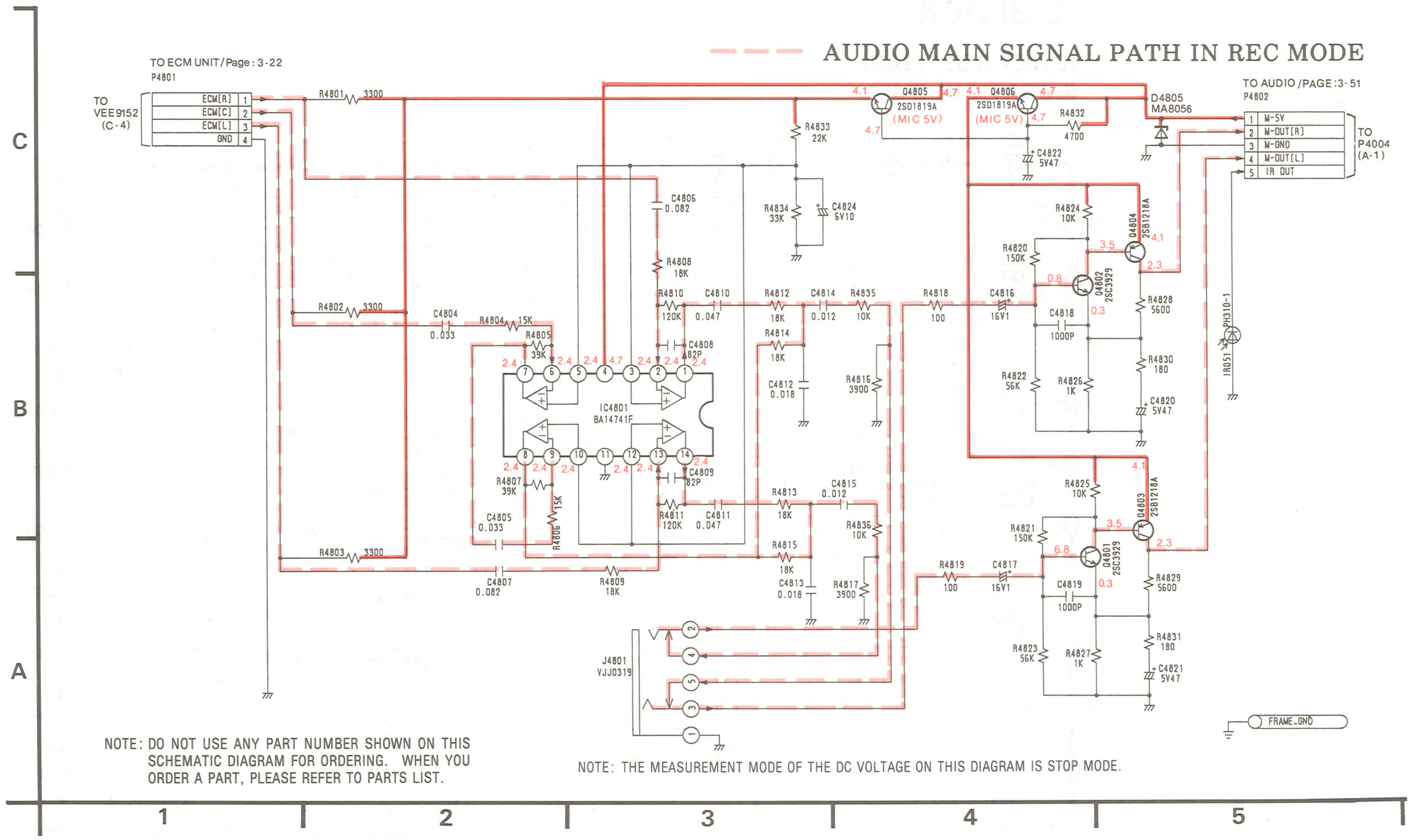
IC BLOCK

IC2001 (TB6513AF)
(LOCATION: B-4)


CEC
48
CECR
47
CTL
46
CPCI
45
CPCV
44
CPCS
43
CGND
42
CCS
41
CPCH
40
H1+
39
H1−
38
H2+
37
H2−
36
H3+
35
H3−
34
CVM
33
CRFS
49
CSW
50
YSW
51
GSW
52
FC
53
VCC
54
YCLK
55
YT1
56
YSFS
57
CFG
58
YPG
59
YFG
60
61
REF
62
YPG OUT
63
YPG IN
64
32
CM1
31
CM2
30
CM3
29
CU3
28
CU2
27
CU1
26
CL1
25
CL2
24
CL3
23
YU3
22
YU2
21
YU1
20
YL1
19
YL2
18
YL3
17
YM1
1
YFG OUT
2
YFG IN
3
CFG OUT
4
CFG IN
(H:STOP L:START)
5
YSTB
6
YSUL
7
YEC
8
YECR
9
YPCI
10
YPCV
11
YPCS
12
YGND
13
YCS
14
YVM
15
YM3
16
YM2
RFS
AMP (TSC)
HALL MATRIX
LOGIC
DIRECTION DETECTOR
VM SHORT PROTECTOR
VM UNDER LIMIT
UPPER VCE DETECTOR
(VUS)
(VLL)
LOWER VCE DETECTOR
(VLS)
VUL
FC-COP
ABSOLUTE VALUE
1/12
MODU-LATION
VLL
VUL
TSC
VLS
VUS
PCV AMP
(VLL)
DIRECTION SELECT
UPPER DISTRIBUTOR
AMP
LOWER DISTRIBUTOR
AMP
SHAPE
MINIMUM
ADD
AMP
ABSOLUTE VALUE
SLOPE FORMER
DISTRIBUTOR
AMP
ACTIVE COIL SWITCHING LOGIC
LOWER VCE DETECTOR
TERMINAL VOLTAGE COMPARATOR
UPPER VCE DETECTOR
VM LIMITER
EDGE DETECTOR

Next Page:
MIC & AV JACK Section

3-27. MIC SCHEMATIC DIAGRAM


AUDIO MAIN SIGNAL PATH IN REC MODE

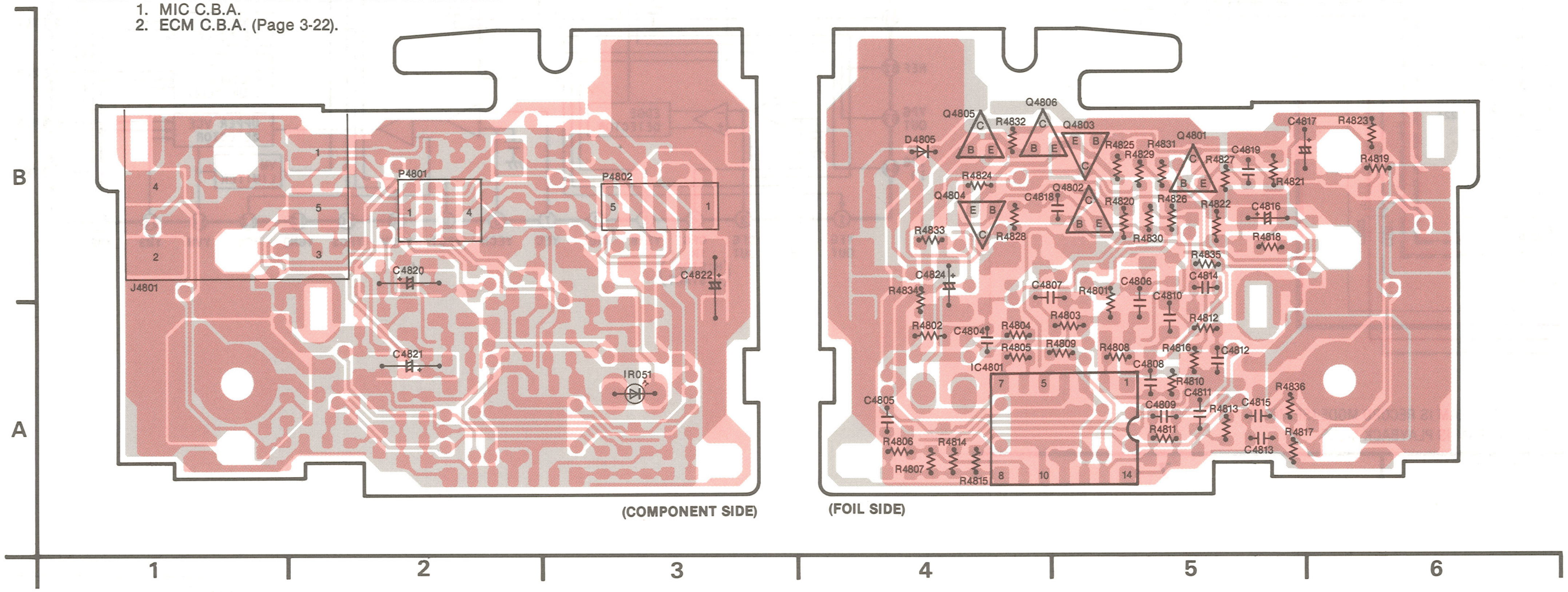
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

TO ECM UNIT / Page : 3-22
P4801
TO VEE9152 (C-4)
ECM(R) 1
ECM(C) 2
ECM(L) 3
GND 4
R4801 3300
R4802 3300
R4803 3300
C4804 0.033
R4804 15K
R4805 39K
C4806 0.082
R4808 18K
R4810 120K
C4810 0.047
C4808 82P
IC4801 BA14741F
R4807 39K
C4805 0.033
R4806 15K
C4809 82P
R4811 120K
C4811 0.047
C4807 0.082
R4809 18K
R4833 22K
R4834 33K
C4824 6V10
R4812 18K
C4814 0.012
R4835 10K
R4814 18K
C4812 0.018
R4816 3900
R4813 18K
C4815 0.012
R4836 10K
R4815 18K
C4813 0.018
R4817 3900
R4818 100
R4819 100
Q4805 2SD1819A (MIC 5V)
Q4806 2SD1819A (MIC 5V)
R4832 4700
C4822 5V47
D4805 MA8056
TO AUDIO / PAGE : 3-51
P4802
1 M-5V
2 M-OUT(R)
3 M-GND
4 M-OUT(L)
5 IR OUT
TO P4004 (A-1)
R4824 10K
Q4804 2SB1218A
R4820 150K
Q4802 2SC3929
C4816 16V1
C4818 1000P
R4828 5600
R4830 180
R4822 56K
R4826 1K
C4820 5V47
IR051 PH310-1
R4825 10K
Q4803 2SB1218A
R4821 150K
Q4801 2SC3929
C4817 16V1
C4819 1000P
R4829 5600
R4823 56K
R4827 1K
R4831 180
C4821 5V47
J4801 VJJ0319
FRAME_GND
4.1
4.7
2.4
3.5
0.8
0.3
2.3
6.8
C
B
A
1
2
3
4
5

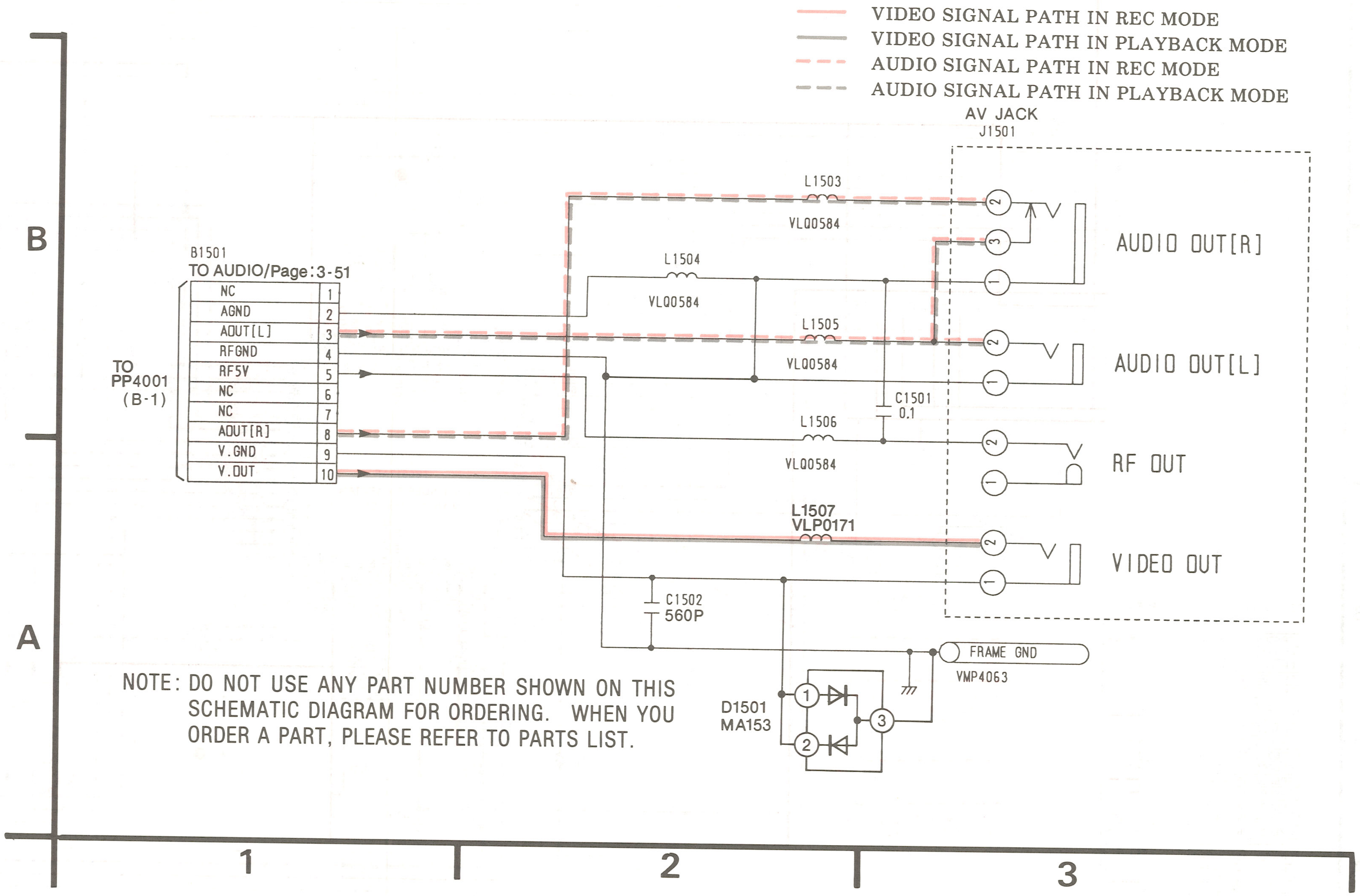
3-28. MIC C.B.A. (VEK7290)

NOTE: ∗ VEK7290 CONSISTS TWO CIRCUIT BOARDs.
1. MIC C.B.A.
2. ECM C.B.A. (Page 3-22).


(COMPONENT SIDE) (FOIL SIDE)

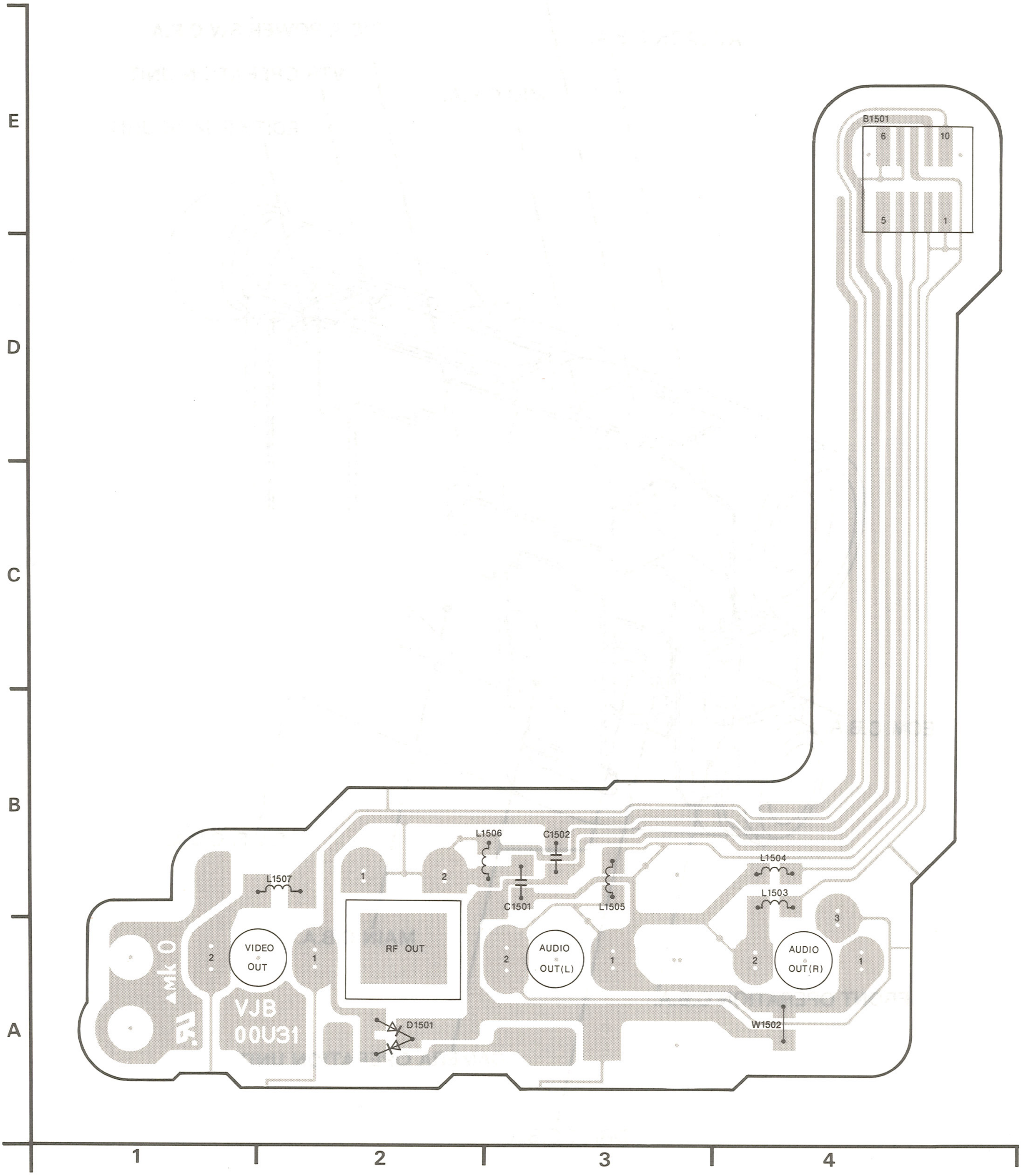
B
A
J4801
P4801
P4802
C4820
C4821
C4822
IR051
Q4805
Q4806
Q4803
Q4801
Q4802
Q4804
D4805
R4832
R4825
R4831
R4829
R4827
C4819
R4821
C4817
R4823
R4819
R4824
C4818
R4820
R4826
R4822
C4816
R4833
R4828
R4830
R4818
R4835
C4824
R4834
C4807
R4801
C4806
C4810
C4814
R4802
C4804
R4804
R4803
R4812
R4805
R4809
R4808
R4816
C4812
IC4801
C4808
R4810
C4809
C4811
R4813
C4815
R4836
C4805
R4806
R4814
R4811
R4817
C4813
R4807
R4815
1
2
3
4
5
6

3-29. AV JACK SCHEMATIC DIAGRAM


VIDEO SIGNAL PATH IN REC MODE
VIDEO SIGNAL PATH IN PLAYBACK MODE
AUDIO SIGNAL PATH IN REC MODE
AUDIO SIGNAL PATH IN PLAYBACK MODE
AV JACK
J1501
B
A
1
2
3
B1501
TO AUDIO/Page:3-51
TO
PP4001
(B-1)
NC 1
AGND 2
AOUT[L] 3
RFGND 4
RF5V 5
NC 6
NC 7
AOUT[R] 8
V.GND 9
V.OUT 10
L1503
VLQ0584
L1504
VLQ0584
L1505
VLQ0584
L1506
VLQ0584
L1507
VLP0171
C1501
0.1
C1502
560P
AUDIO OUT[R]
AUDIO OUT[L]
RF OUT
VIDEO OUT
FRAME GND
VMP4063
D1501
MA153

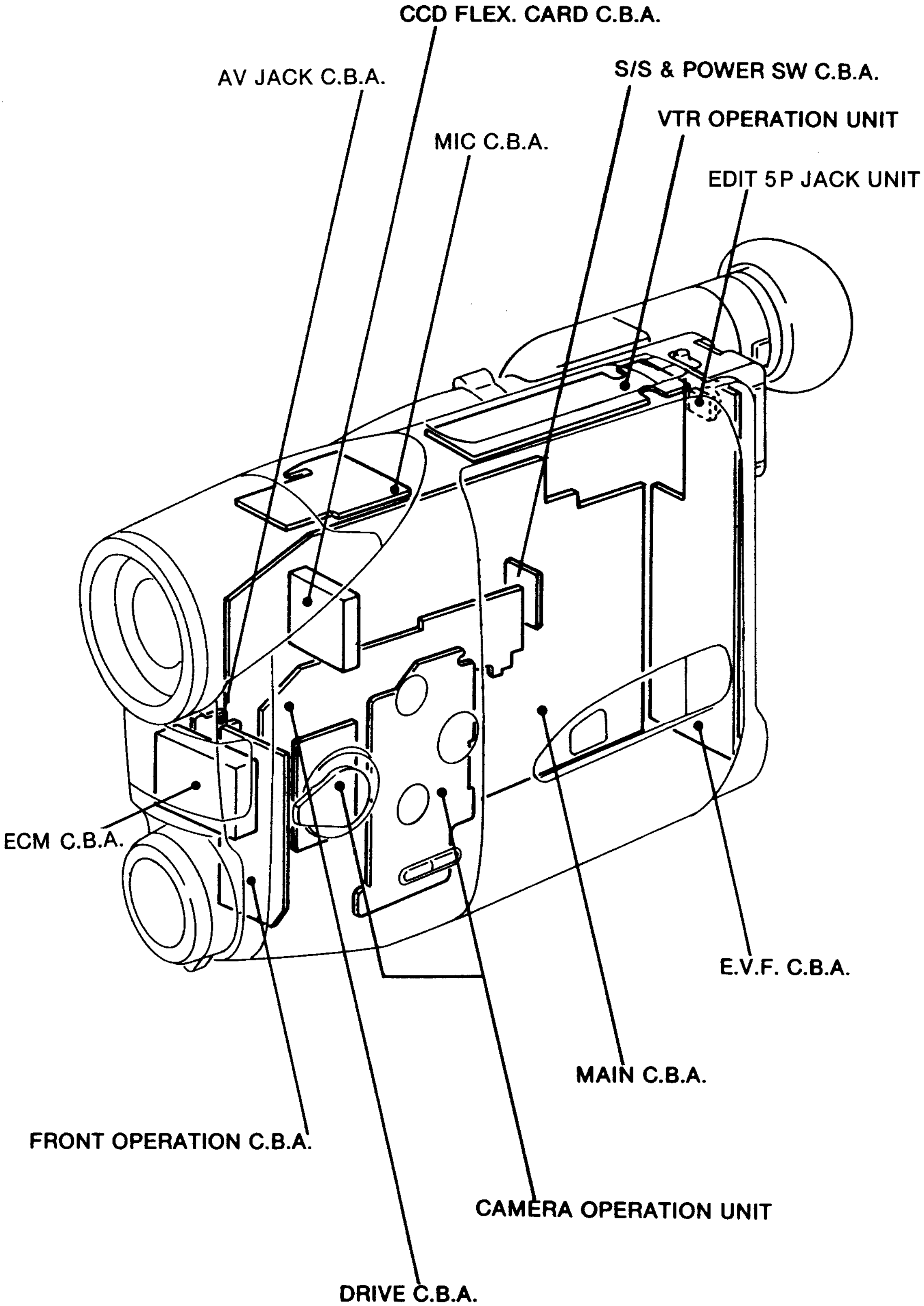
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-30. AV JACK C.B.A. (VEP00U31B)

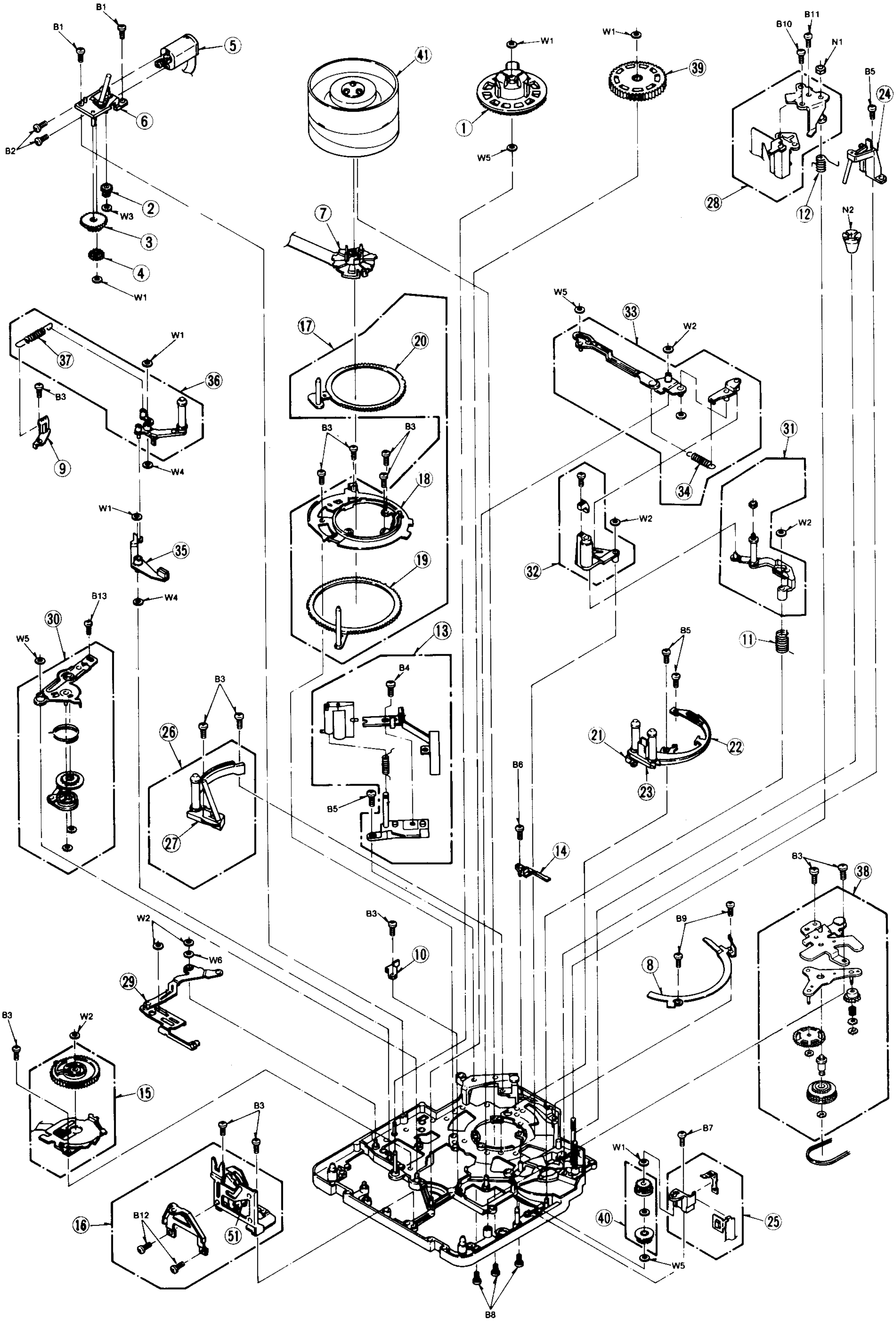


E
D
C
B
A
B1501
6
10
5
1
L1506
C1502
L1507
L1504
L1503
C1501
L1505
1
2
3
VIDEO OUT
RF OUT
AUDIO OUT(L)
AUDIO OUT(R)
D1501
W1502
▲mk 0
VJB 00U31
1
2
3
4

3-31. CIRCUIT BOARD LAYOUT

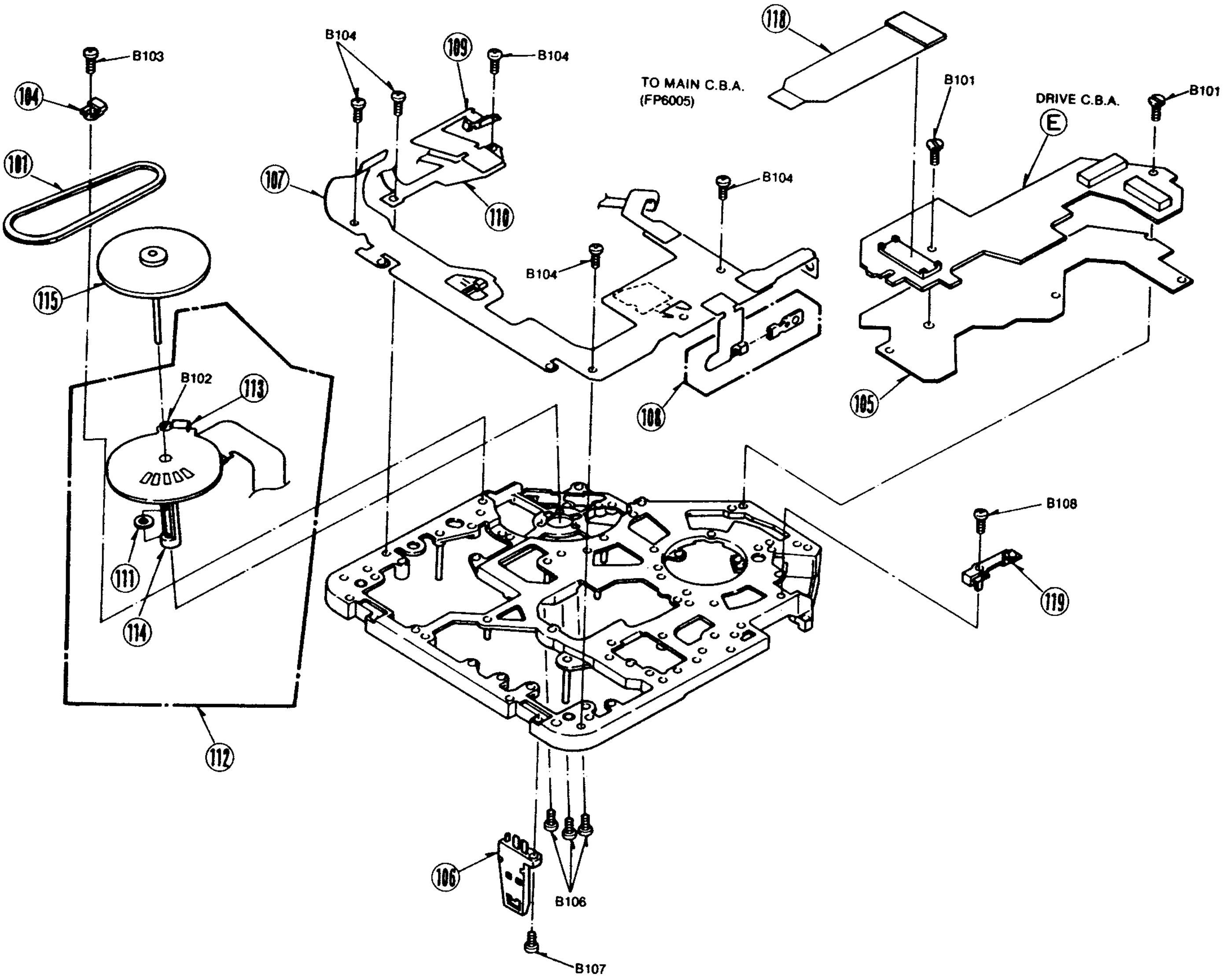

CCD FLEX. CARD C.B.A.
AV JACK C.B.A.
S/S & POWER SW C.B.A.
VTR OPERATION UNIT
MIC C.B.A.
EDIT 5P JACK UNIT
ECM C.B.A.
E.V.F. C.B.A.
MAIN C.B.A.
FRONT OPERATION C.B.A.
CAMERA OPERATION UNIT
DRIVE C.B.A.

SECTION 4
EXPLODED VIEWS & PARTS LIST
4-1. EXPLODED VIEWS ❶ VTR MECHANISM SECTION (1)

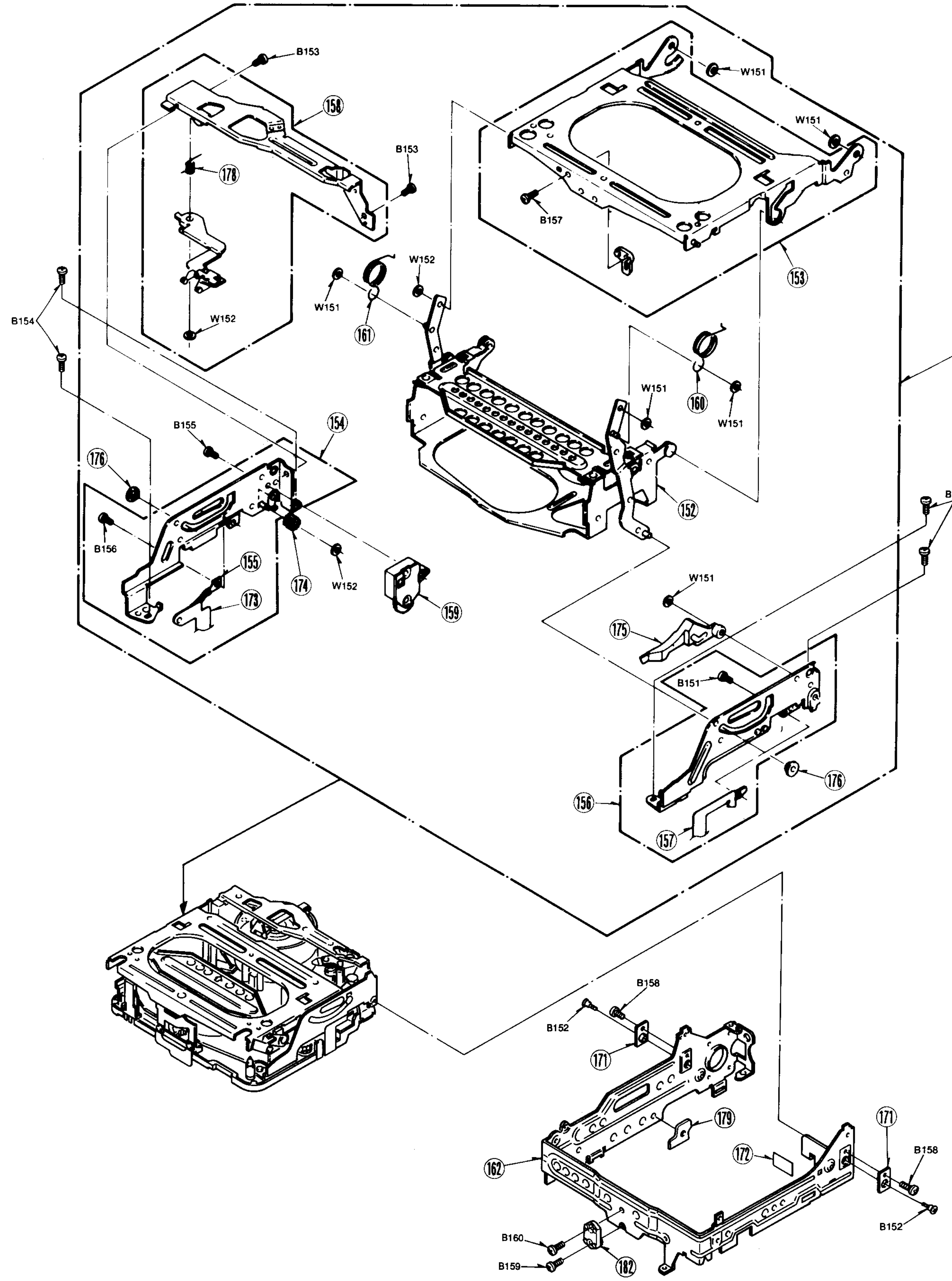


B1
B1
⑤
⑥
B2
②
W3
③
④
W1
㊶
W1
①
W5
W1
㊴
B10
B11
N1
B5
㉔
㉘
⑫
N2
⑦
⑰
⑳
B3
B3
⑱
⑲
⑬
B4
B5
W5
㉝
W2
㉞
㉛
W2
㉜
W2
⑪
B5
㉑
㉒
㉓
B6
⑭
㊲
W1
㊱
B3
⑨
W4
W1
㉟
W4
B13
㉚
W5
B3
㉖
㉗
B3
⑩
W2
W6
㉙
B3
W2
⑮
B3
⑯
B12
(51)
B3
㊳
B9
⑧
B7
W1
㊵
㉕
W5
B8

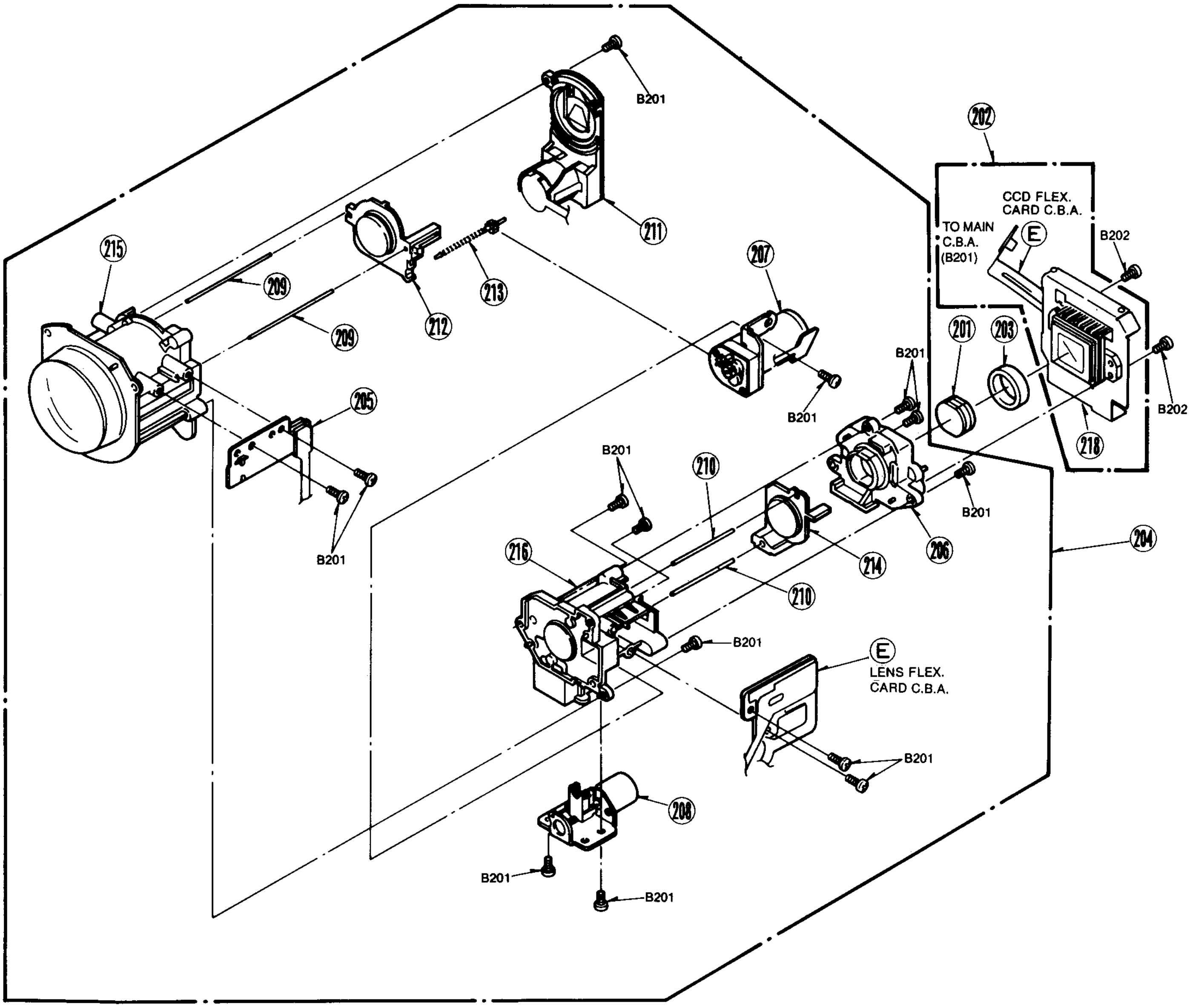
❷ VTR MECHANISM SECTION (2)


B103
104
101
115
B102
113
111
114
112
B104
109
B104
107
110
B104
B104
108
118
TO MAIN C.B.A.
(FP6005)
B101
DRIVE C.B.A.
E
B101
105
B108
119
106
B106
B107

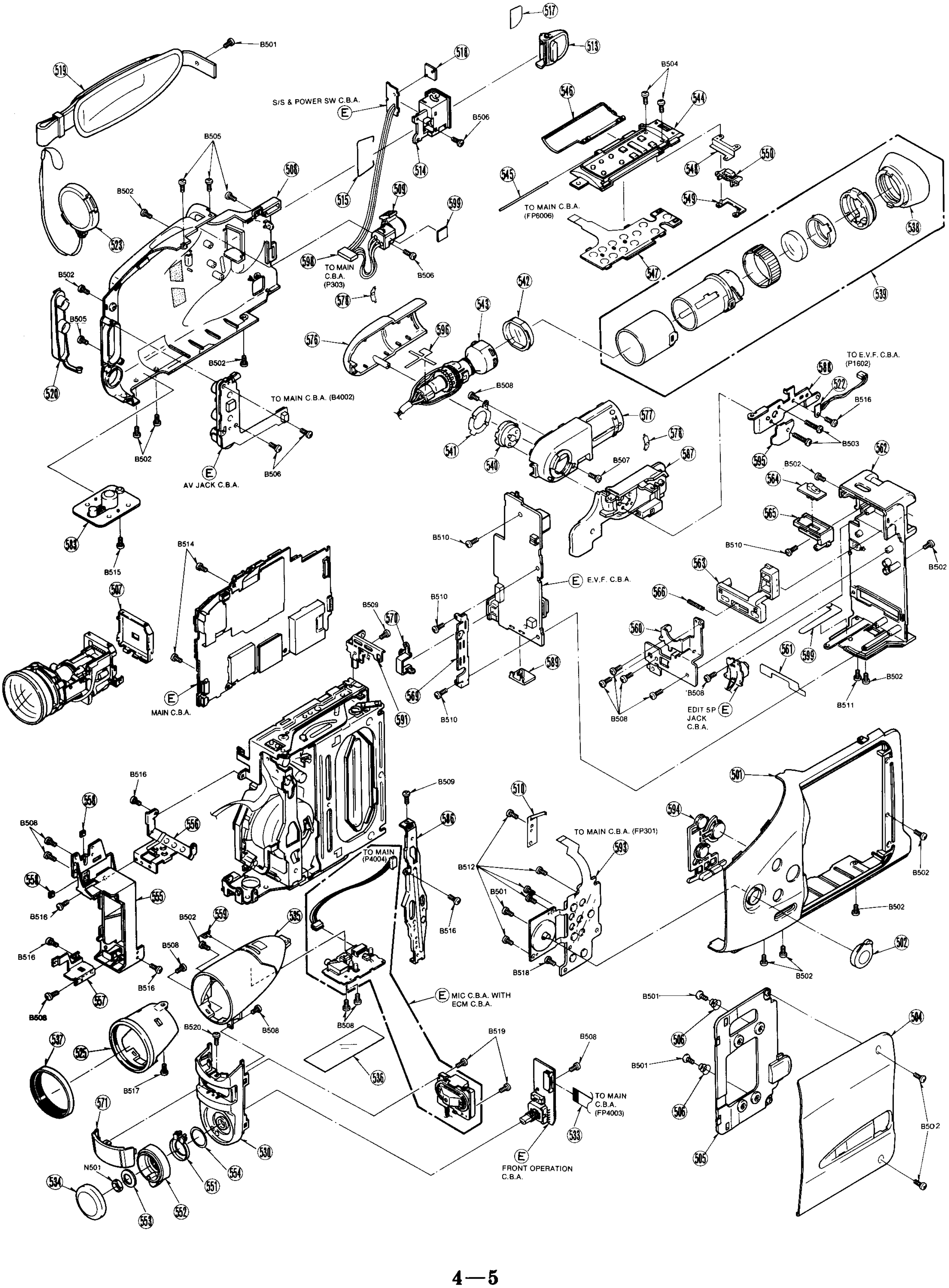
❸ VTR MECHANISM SECTION (3)


B153
(158)
B153
(178)
W151
W151
B157
(153)
W152
W151
(161)
W152
B154
(151)
W151
(160)
W151
B155
(154)
(176)
(152)
B156
(155)
(174)
W152
(173)
(159)
B154
W151
(175)
B151
(176)
(156)
(157)
B158
B152
(171)
(179)
(171)
B158
(172)
(162)
B152
B160
(182)
B159

❹ CAMERA LENS SECTION

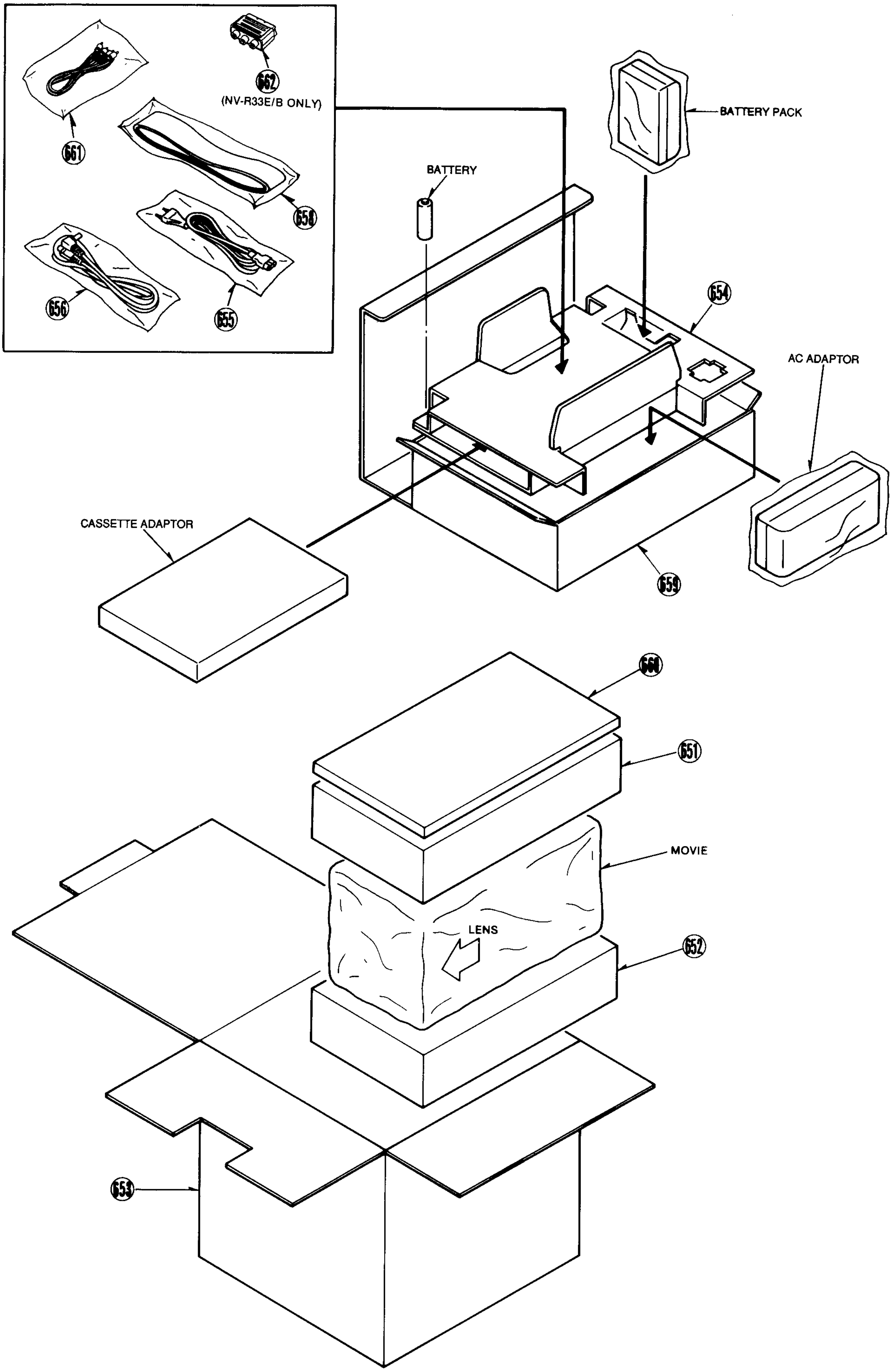

B201
202
211
CCD FLEX.
CARD C.B.A.
TO MAIN
C.B.A.
(B201)
E
B202
215
209
212
213
209
207
201
203
B201
B201
218
B202
205
B201
B201
210
B201
206
214
216
210
204
B201
E
LENS FLEX.
CARD C.B.A.
B201
208
B201
B201

❺ FRAME & CASING PARTS SECTION



517
513
B501
518
519
B504
544
546
S/S & POWER SW C.B.A.
E
B506
514
B505
508
545
548
550
B502
515
509
549
599
TO MAIN C.B.A. (FP6006)
523
598
TO MAIN C.B.A. (P303)
B506
547
538
578
539
542
543
B502
B505
576
596
B502
TO E.V.F. C.B.A. (P1602)
588
522
B508
B516
520
TO MAIN C.B.A. (B4002)
577
578
B503
541
595
562
540
B502
B502
B507
587
E
AV JACK C.B.A.
B506
564
565
583
B510
B510
B502
B514
B515
563
E.V.F. C.B.A.
507
566
B510
B509
570
560
561
599
589
569
B508
B502
591
B508
EDIT 5P JACK C.B.A.
B511
MAIN C.B.A.
B510
501
B516
B509
510
594
558
556
TO MAIN C.B.A. (FP301)
B508
546
593
TO MAIN (P4004)
B502
B512
554
555
B501
B516
B502
559
585
B516
B516
B508
B516
502
B502
B518
557
E
MIC C.B.A. WITH ECM C.B.A.
B508
B501
504
B508
537
B520
B508
B519
B508
506
525
536
B501
B517
TO MAIN C.B.A. (FP4003)
571
506
530
533
B502
N501
554
551
E
FRONT OPERATION C.B.A.
505
534
552
553

⑥ PACKING PARTS & ACCESSORIES SECTION


(662)
(NV-R33E/B ONLY)
(661)
(658)
(656)
(655)
BATTERY PACK
BATTERY
(654)
AC ADAPTOR
CASSETTE ADAPTOR
(659)
(660)
(651)
MOVIE
LENS
(652)
(653)

4-2. MECHANICAL REPLACEMENT PARTS LIST

Note:1.* Be sure to make your orders of replacement parts according to this list.
2.IMPORTANT SAFETY NOTICE
Components identified with the mark <!> have the special characteristics for safety. When replacing any of these components,use only the same type.

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
1(1)		VDR0226	REEL BASE (S)	1	
2(1)		VDG0821	BRAKE GEAR (A)	1	
3(1)		VDG0822	BRAKE GEAR (B)	1	
4(1)		VDG0823	BRAKE GEAR (C)	1	
5(1)		VEM0417	LOADING MOTOR (1) U.	1	<!>
6(1)		VXA4527	MOTOR HOLDER U.	1	
7(1)		VEK7073	RT CONNECTOR U.	1	
8(1)		VMA8502	T-RING SLIDER	1	
9(1)		VMA8505	TEN-REG.SPRING HOOK	1	
10(1)		VMA8532	PENDULUM ARM HOLDER	1	
11(1)		VMB2362	T3 ARM SPRING	1	
12(1)		VMB2365	AC HEAD SPRING	1	
13(1)		VXA5306	S-GUIDE STAND U.	1	
14(1)		VMD1851	T-BOAT GUIDE	1	
15(1)		VSR0096	MODE SWITCH U.	1	
16(1)		VXA5001	LOCK BASE U.	1	
17(1)		VXA4517	LOADING RING U.	1	
18(1)		VMD1824	RING GUIDE	1	
19(1)		VXA4518	T-RING U.	1	
20(1)		VXA4519	S-RING U.	1	
21(1)		VEK5549	LED U.	1	
22(1)		VMD1828	T-RAIL	1	
23(1)		VXA5260	T-BOAT U.	1	
24(1)		VXA4528	T4 POST U.	1	
25(1)		VXA4997	T-REEL SENSOR U.	1	
26(1)		VXA5153	S-RAIL U.	1	
27(1)		VXA5124	S-BOAT U.	1	
28(1)		VXA5201	AC HEAD U.	1	
29(1)		VXL2393	EJECT LEVER (1) U.	1	
30(1)		VXL2401	SWING ARM U.	1	
31(1)		VXL2431	T3 ARM (A) U.	1	
32(1)		VXL2139	PINCH ARM U.	1	
33(1)		VXL2140	PINCH DRIVE ARM U.	1	
34(1)		VMB2363	PINCH PRESSURE SPRING	1	
35(1)		VXL2144	PAD ARM U.	1	
36(1)		VXL2145	TEN-REG. ARM U.	1	
37(1)		VMB2364	TEN-REG. SPRING	1	
38(1)		VXL2399	IDLER U.	1	
39(1)		VXP1308	RELAY GEAR U.	1	
40(1)		VXP1313	T-DRIVE GEAR U.	1	
41(1)		VEG1047	CYLINDER U.	1	NV-R33E
41(1)		VEG1046	CYLINDER U.	1	NV-R33B/A,R330EN
51(1)		VMB2369	LOCK SPRING	1	
B1(1)		XQN14+B25FY	SCREW	2	
B2(1)		XQN14+A14	SCREW	2	
B3(1)		XQN14+B2	SCREW	13	
B4(1)		XQN14+BJ35	SCREW	1	
B5(1)		XQN14+B25FY	SCREW	3	
B6(1)		XQN14+B25FY	SCREW	1	
B7(1)		XQN14+B25FY	SCREW	1	
B8(1)		XQN14+C35R	SCREW	3	
B9(1)		VHD0711	SCREW	2	
B10(1)		VHD0700	SCREW	1	
B11(1)		VHD0699	SCREW	1	
B12(1)		XQN14+CF25	SCREW	2	
B13(1)		VHD0707	SCREW	1	
N1(1)		VHN0047	NUT	1	
N2(1)		VHN0175	NUT	1	
W1(1)		VMX2027	WASHER	6	
W2(1)		VMX2026	WASHER	7	
W3(1)		VMX2051	WASHER	1	
W4(1)		XWGV12Z3G	WASHER	2	
W5(1)		XWGV12Y3G	WASHER	3	
W6(1)		VMX2026	WASHER	1	
101(2)		VDV0232	CAPSTAN BELT	1	
104(2)		VMD1846	CAPSTAN STOPPER	1	
105(2)		VMZ1871	BARRIER	1	
106(2)		VSH0055	REC SAFETY SW U.	1	
107(2)		VWJ0719	MECH.FLEXIBLE CARD	1	
108(2)		VXA4511	PHOTO (L) U.	1	
109(2)		VXA4514	PHOTO (R) U.	1	
110(2)		VXA4997	T-REEL SENSOR U.	1	
111(2)		VDB1129	LOWER BEARING	1	
112(2)		VEK7314	STATOR U.	1	
113(2)		VBK0059	MR HEAD	1	
114(2)		VXD0134	HOUSING U.	1	
115(2)		VXP1303	ROTOR U.	1	
119(2)		VMP4011	H.A. EARTH PLATE	1	
B101(2)		VHD0681	SCREW	1	
B102(2)		VHD0593	SCREW	1	
B103(2)		XQN14+B2	SCREW	1	
B104(2)		XQN14+C2R	SCREW	5	
B106(2)		XQN14+A3	SCREW	3	
B107(2)		XQN14+CF4	SCREW	1	
B108(2)		XQN14+C2	SCREW	1	
151(3)		VXA5198	GARAGE U.	1	
152(3)		VXA5199	HOLDER U.	1	
153(3)		VXA4863	GARAGE (1) U.	1	
154(3)		VXA4510	STAND (L) U.	1	
155(3)		VXA4511	PHOTO (L) U.	1	
156(3)		VXA4513	STAND (R) U.	1	
157(3)		VXA4514	PHOTO (R) U.	1	
158(3)		VXL2222	TAPE GUIDE U.	1	
159(3)		VXP1472	DUMPER	1	
160(3)		VMB2367	UP SPRING (R)	1	
161(3)		VMB2368	UP SPRING (L)	1	
162(3)		VMP4070	VTR FRAME (A)	1	
171(3)		VGQ3137	INSULATION PIECE (A)	2	
172(3)		VGQ3353	FRAME BARRIER	1	
173(3)		VWJ0548	PHOTO FLEX.CARD	1	
174(3)		VDG0827	DUMPER RELAY GEAR	1	
175(3)		VML2580	TAPE OPEN LEVER	1	
176(3)		VDP1406	ARM HOLDER	2	
178(3)		VMB2498	TAPE GUIDE SPRING	1	
179(3)		VGQ3327	FRAME SPACER	1	
182(3)		VGQ3444	INSULATION PIECE	1	
B151(3)		VHD0776	SCREW	1	
B152(3)		VHD0713	SCREW	2	
B153(3)		XQN14+B2	SCREW	2	
B154(3)		VHD0838	SCREW	4	
B155(3)		XQN16+AJ8	SCREW	1	
B156(3)		XQN14+CM2	SCREW	1	
B157(3)		XQS14+A25FZ	SCREW	1	
B158(3)		XQN2+C2	SCREW	2	
B159(3)		XQN2+CF5	SCREW	1	
B160(3)		XQN2+C25	SCREW	1	
W151(3)		VMX1042	WASHER	6	
W152(3)		VMX1061	WASHER	3	
201(4)		VDL0419	CRYSTAL FILTER	1	
202(4)		VEK7329	CCD UNIT	1	
203(4)		VMX2304	CCD CUSHION	1	
204(4)		VXW0188	LENS U.	1	
205(4)		EVAWMCJ02B14	ZOOM ENCODER U.	1	
206(4)		VDW0259	CRYSTAL MOUNT PLATE	1	
207(4)		VEM0450	ZOOM MOTOR U.	1	
208(4)		VEM0451	FOCUS MOTOR U.	1	
209(4)		VMS5384	Z GUIDE POLE	2	
210(4)		VMS5385	F GUIDE POLE	2	
211(4)		VXL2443	IRIS U.	1	
212(4)		VXP1412	2ND. MOVING FRAME U.	1	
213(4)		VXP1413	SCREW SHAFT U.	1	
214(4)		VXP1414	4TH. MOVING FRAME U.	1	
215(4)		VXQ0356	MAIN FRAME U.	1	
216(4)		VXQ0357	3RD. MOVING FRAME U.	1	
218(4)		VSC3671	CCD SHIELD CASE	1	
219(4)		VXQ0422	WIDE LENS HOLDER U.	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
B201(4)		XQN16+CJ5	SCREW	14	
B202(4)		XQN16+CJ6	SCREW	5	
501(5)		VYK6382	SIDE CASE (R)(1) U.	1	
502(5)		VGU6793	MODE SELECT LEVER	1	
504(5)		VYK6303	CASSETTE COVER (1) U.	1	NV-R33E/B/A
504(5)		VYK6304	CASSETTE COVER (1) U.	1	NV-R330EN
505(5)		VGU6312	CASSETTE LOCK BUTTON	1	
506(5)		VMB2604	CASSETTE COIL SPRING	2	
507(5)		VSC4187	CCD SHIELD CASE	1	
508(5)		VYK6379	SIDE CASE (L)(1)U.	1	
509(5)		VXU1272	ZOOM BUTTON U.	1	
510(5)		VMC0969	CASSETTE HOLD SPRING	1	
513(5)		VXU1274	S/S BUTTON (1) U.	1	
514(5)		VGQ3730	S/S BUTTON HOLDER	1	
515(5)		VMB2594	S/S BUTTON COVER SPRING	1	
517(5)		VGQ3588	S/S BUTTON SHEET	1	
518(5)		VMG0833	RUBBER SW	1	
519(5)		VYC0618	GRIP BELT U.	1	
520(5)		VKF2009	AV JACK COVER	1	
522(5)		VEK7029	DEW SENSOR	1	
523(5)		VYF1987	HOOD CAP U.	1	
525(5)		VDW0292	LENS PIECE	1	
530(5)		VKM4051	FRONT CASE	1	
533(5)		VWJ0899	FRONT FLEX. CARD	1	
534(5)		VGU6840	FOCUS KNOB	1	
535(5)		VYK6312	LENS COVER (1) U.	1	
536(5)		VMZ2370	MIC C.B.A. BARRIER	1	
537(5)		VDW0303	LENS HOOD	1	
538(5)		VMG0631	EYE CAP	1	
539(5)		VYK5508	SLIDE CASE U.	1	
540(5)		VGQ3122	ROTARY PIECE	1	
541(5)		VMC0977	ROTATION LOCK SPRING	1	
542(5)		VKW1806	PROTECTION PANEL	1	
543(5)		M01KUA07WB04	CRT UNIT	1	<!>
544(5)		VXU1191	TOP OPERATION PANEL (1) U.	1	NV-R33E
544(5)		VXU1204	TOP OPERATION PANEL (1) U.	1	NV-R33B/A,R330EN
545(5)		VMS5382	SHAFT	1	
546(5)		VKF2139	TOP DOOR	1	
547(5)		ESU39009	VTR OPERATION U.	1	
548(5)		VSC3918	EARTH ANGLE	1	
549(5)		VGL0563	PANEL LIGHT	1	
550(5)		VGU6344	CAM/VTR SELECT BUTTON	1	
551(5)		VGQ3727	SELECT PIECE	1	
552(5)		VGU6842	SELECT KNOB	1	
553(5)		VMX2288	SELECT KNOB SPACER	1	
554(5)		VMX2247	SPACER	1	
555(5)		VMD2332	LENS FRAME	1	
556(5)		VMP4072	SUPPORT ANGLE	1	
557(5)		VMP4284	FRONT ANGLE	1	
558(5)		VHN0057	CASE FIX. ANGLE	2	
559(5)		VKF2295	MIC CAP	1	
560(5)		VMP4239	REAR CASE FIX. ANGLE	1	
561(5)		VMZ2179	REAR SHEET	1	
562(5)		VKM4064	REAR CASE	1	
563(5)		VGQ3380	BATTERY LOCK	1	
564(5)		VGU6494	EJECT KNOB	1	
565(5)		VGQ3381	EJECT KNOB HOLDER	1	
566(5)		VMB2683	BATTERY LOCK SPRING	1	
569(5)		VMP4062	CASE (R) FIX. ANGLE	1	
570(5)		VMP4075	DC JACK HOLD ANGLE	1	
571(5)		VYQ1089	MIC NET U.	1	
573(5)		VGQ3459	CABLE FIX. BARRIER	1	
576(5)		VKM3682	EVF CASE (L)	1	
577(5)		VKM3681	EVF CASE (R)	1	
578(5)		VMC0978	SLIDE SPRING	2	
583(5)		VYQ0998	TRIPOD FRAME U.	1	
586(5)		VMP4286	VTR FRAME (B)	1	
587(5)		VGQ3383	EVF FIXING PIECE	1	
588(5)		VMP4238	EVF FIXING PLATE	1	
589(5)		VGU6495	POWER SAVE KNOB	1	
591(5)		VMP4237	VTR FRAME (C)	1	
593(5)		ESU39021	CAMERA OPERATION UNIT	1	
594(5)		VGU6792	CAM. OPE. BUTTON	1	
595(5)		VMZ2275	EVF FIXING PIECE BARRIER	1	
596(5)		VMZ2274	EVF BARRIER	1	
598(5)		VEE9215	S/S, ZOOM CONNECTOR CABLE	1	
599(5)		VMZ2277	ZOOM BUTTON BARRIER	1	
B501(5)		VHD0794	SCREW	4	
B502(5)		VHD0729	SCREW	15	
B503(5)		VHD0689	SCREW	2	
B504(5)		XQN2+CF55FZ	SCREW	2	
B505(5)		XQN2+CF8FZ	SCREW	4	
B506(5)		XQN2+CJ8	SCREW	4	
B507(5)		XQN2+CJ8FZ	SCREW	1	
B508(5)		XQN2+CJ4	SCREW	15	
B509(5)		XQN2+C25	SCREW	2	
B510(5)		XTB2+6G	SCREW	4	
B511(5)		XQN2+C3FZ	SCREW	1	
B512(5)		XTB2+4J	SCREW	5	
B513(5)		XQN2+CF4	SCREW	1	
B514(5)		XTB2+5F	SCREW	2	
B515(5)		XQN2+C2	SCREW	1	
B516(5)		XQN2+CF3	SCREW	5	
B517(5)		XQN2+CJ3	SCREW	1	
B518(5)		XTB2+3J	SCREW	1	
B519(5)		XQN2+CJ8	SCREW	2	
B520(5)		XQN2+CF4FZ	SCREW	1	
N501(5)		XNS9	NUT	1	
651(6)		VPN4063	CUSHION (UPPER)	1	
652(6)		VPN4064	CUSHION (LOWER)	1	
653(6)		VPG7820	PACKING	1	NV-R33E
653(6)		VPG7823	PACKING	1	NV-R330EN
					(ONLY HONG KONG)
653(6)		VPG7822	PACKING	1	NV-R330EN
					(EXCEPT HONG KONG)
653(6)		VPG7821	PACKING	1	NV-R33B
653(6)		VPG7825	PACKING	1	NV-R33A
654(6)		VPN4134	ACCESSORIES PAD	1	
655(6)		VJA0664	AC CORD	1	<!>NV-R33E,R330EN
					(EXCEPT HONG KONG)
655(6)		VJA0754	AC CORD	1	<!>NV-R33A
655(6)		VJA0733	AC CORD	1	<!>NV-R33B,R330EN
					(ONLY HONG KONG)
656(6)		VJA0769	DC OUTPUT CABLE	1	
658(6)		VFC1757	SHOLDER STRAP	1	
659(6)		VPN4065	ACCESSORIES BOX	1	
660(6)		VQT6003	OPERATING INSTRUCTIONS	1	<!>NV-R33E
			(ENGLISH/GERMAN/FRENCH/		
			ITALIAN)		
660(6)		VQT6004	OPERATING INSTRUCTIONS	1	<!>NV-R33E
			(SPANISH/DUTCH/SWEDISH/		
			DANISH)		
660(6)		VQT6005	OPERATING INSTRUCTIONS	1	<!>NV-R330EN
			(ENGLISH/CHINESE/ARABIC/		
			RUSSIAN)		
660(6)		VQT6000	OPERATING INSTRUCTIONS	1	<!>NV-R33B
			(ENGLISH)		
660(6)		VQT6001	OPERATING INSTRUCTIONS	1	<!>NV-R33A
			(ENGLISH)		
661(6)		VJA0788	AV CORD	1	
662(6)		VFA0151	21 PIN ADAPTOR	1	NV-R33E/B
			****** JIG & TOOLS *****		
			-------- ELECTRICAL -------		
		VFM8180HUPF	VHS-C ALIGMENT TAPE	1	PAL
		VFK0374	COLOUR TEMP.CONV.FILRTER	1	(C12) OR VFK0713
		VEK0375	COLOUR TEMP.CONV.FILRTER	1	(C2) OR VFK0716
		VFK0644	EVR FIXTURE	1	
		VFK0701ROM29	ROM	1	
		VFK0766A	EVR CONNECTION CABLE 5P	1	
		VFK0734W	MEASURENT CABLE 24P	1	
		VFK0668	EXTENSHION CABLE 24P	1	(FOR MEASUREMENT)
		VFK0727	FLAT CABLE 16P	1	
		VFK0728	FLAT CABLE 9P	1	(OR VFK0980)

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
		VFK0729	FLAT CABLE 6P	1	(OR VFK0978)
		VFK0839	EXTENSION CABLE 30P	1	
		VFK0913	FLAT CABLE 18P	1	
		VFK0929	FLAT CABLE 12P	1	
		VFK0949	FLAT CABLE 22P	1	
			------ MECHANICAL ------		
		VFK0743	H-POSITION ADJUSTMENT	1	
		VFK0824	ASTERISK TYPE RENCH	1	
		VFK0335	RETAINING RING REMOVER	1	
		VFK0329	POST ADJ. SCREW DRIVER	1	
		VFK0326	HEX WRENCH SET	1	
		VFK27	HEAD CLEANING STICK	1	
		MOR265	MORLTONE GREASE	1	

NOTE(ONLY FOR NV-R330EN) : There are two versions of NV-R330EN depends on cuntries.
One is for Hong Kong, the other one is for all of other "EN"
area. The difference parts are only PACKING CASE and AC CORD.

4-3. ELECTRICAL REPLACEMENT PARTS LIST

Note:1.Be sure to make your orders of replacement parts according to this list.
2.IMPORTANT SAFETY NOTICE : Components identified with the mark <!> have the special characteristics for safety. When replacing any of these components,use only the same type.
3.Unless otherwise specified,
All resistors are in OHMS , K=1,000 OHMS. All capacitors are in MICRO-FARADS(uf),P=uuF.
4.The P.C.Board units marked width'■'show below the main assembled parts.
5.The marking(RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
		VEP23251A	MAIN C.B.A.	1	(RTL)NV-R33E
		VEP23251B	MAIN C.B.A.	1	(RTL)NV-R33B/A
			(Page:4-10)		NV-R330EN
		VEP02418A	DRIVE C.B.A.	1	(RTL)
			(Page:4-17)		
		VEP28106C	E.V.F. C.B.A.	1	(RTL)
			(Page:4-17)		
		VEK7346	FRONT OPERATION C.B.A.	1	(RTL)
			(Page:4-18)		
		VEP22132C	CCD FLEX. CARD C.B.A.	1	(RTL)
			(Page:4-18)		
		VEK6690	LENS FLEX. CARD C.B.A.	1	(RTL)
			(Page:4-19)		
		VEK7290	MIC C.B.A. WITH ECM C.B.A.	1	(RTL)
			(Page:4-19)		
		VEP00U31B	AV JACK C.B.A.	1	(RTL)
			(Page:4-19)		
		VEK6711	EDIT 5P JACK UNIT	1	(RTL)
			(Page:4-19)		
		VEP00V80A	S/S & POWER SW C.B.A.	1	(RTL)
			(Page:4-19)		
	■	VEP23251A	MAIN C.B.A.		(RTL)NV-R33E
	■	VEP23251B	MAIN C.B.A.		(RTL)NV-R33B/A,R330EN
C202		ECUX1H120JCV	C.CAPACITOR CH 50V 12P	1	
C203		ECUX1H030CCV	C.CAPACITOR CH 50V 3P	1	
C204		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C205		ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C206,07		ECUX1H100CCV	C.CAPACITOR CH 50V 10P	2	
C212		ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C213		ECUX1H100CCV	C.CAPACITOR CH 50V 10P	1	
C215		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C216		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C217		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C218		ECUX1H560JCV	C.CAPACITOR CH 50V 56P	1	
C220		ECST1AX156Z	T.CAPACITOR CH 10V 15U	1	
C221		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C222		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C225		ECST1GX155Z	T.CAPACITOR CH 40V 1.5U	1	
C226,27		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	2	
C231,32		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C233		ECST1CY475Z	E.CAPACITOR CH 16V 47U	1	
C234		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C235		ECUX1H100CCV	C.CAPACITOR CH 50V 10P	1	
C236		ECUX1H220JCV	C.CAPACITOR CH 50V 22P	1	
C237		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C238		ECST0JX226Z	T.CAPACITOR 6.3V 22U	1	
C239		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C240		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C241-44		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	4	
C245		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C246		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C247		ECUX1H473ZFV	C.CAPACITOR CH 50V 0.047U	1	
C249		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C250		ECST0GY226Z	T.CAPACITOR CH 4V 22U	1	
C251		ECST0GY106Z	T.CAPACITOR 4V 10U	1	
C252,53		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C254		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C255		ECUX1H120JCV	C.CAPACITOR CH 50V 12P	1	
C256		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C257		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C258		ECUM1C185ZFN	C.CAPACITOR CH 16V 1.8U	1	
C262		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C264		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C265,66		ECUX1H270JCV	C.CAPACITOR CH 50V 27P	2	
C267		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C270		ECUX1H270JCV	C.CAPACITOR CH 50V 27P	1	
C271		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C272		ECUX1H270JCV	C.CAPACITOR CH 50V 27P	1	
C273,74		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C275,76		ECUX1H270JCV	C.CAPACITOR CH 50V 27P	2	
C301		ECUX1H820JCV	C.CAPACITOR CH 50V 82P	1	
C302,03		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	2	
C304		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C305		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C306		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C307		ECUX1H151JCV	C.CAPACITOR CH 50V 150P	1	
C308		ECUM1C224ZFV	C.CAPACITOR CH 16V 0.22U	1	
C309		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C310		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C312		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C314		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C315		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C316		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C317,18		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	2	
C319		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C320		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C321		ECUX1H821JCV	C.CAPACITOR CH 50V 820P	1	
C323		ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C324		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C325		ECEV0JA101	E.CAPACITOR 6.3V 100U	1	
C326		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C327,28		ECST0JY106Z	T.CAPACITOR 6.3V 10U	2	
C329		ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C330		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C331,32		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C333		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C334,35		ECST0JY106Z	T.CAPACITOR 6.3V 10U	2	
C336		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C337,38		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	2	
C344		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C345,46		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	2	
C353		ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C371		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C701		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C702		ECUM1C104KBN	C.CAPACITOR CH 16V 0.1U	1	
C703		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C711		ECUM1C105KBM	C.CAPACITOR CH 16V 1U	1	
C719		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C720		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C721		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C722		ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C724,25		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	2	
C729		ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C730		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C731		ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C732		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C737		ECUX1H332KBV	C.CAPACITOR CH 50V 3300P	1	
C750		ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C1001		ECUM1C335ZFM	C.CAPACITOR CH 16V 3.3U	1	
C1002		ECGC1BB4R7	C.CAPACITOR CH 8V 4.7U	1	
C1003		ECGC0KB8R2	C.CAPACITOR 8V 8.2U	1	
C1004		ECUX1H331JCV	C.CAPACITOR CH 50V 330P	1	
C1005		ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C1006		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C1007		ECEV05A470	E.CAPACITOR 4V 47U	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C1008		ECGC0KB8R2	C.CAPACITOR 8V 8.2U	1	
C1009		ECUX1H331JCV	C.CAPACITOR CH 50V 330P	1	
C1010		ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C1011		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C1012		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C1013		ECGC1BB4R7	C.CAPACITOR 8V 4.7U	1	
C1014		ECUX1H561JCV	C.CAPACITOR CH 50V 560P	1	
C1015		ECEV1CA470P	E.CAPACITOR 16V 47U	1	
C1016		ECEV0GA470	E.CAPACITOR 4V 47U	1	
C1017		ECUM1E105ZFM	C.CAPACITOR CH 25V 1U	1	
C1019		ECUM1E474ZFM	C.CAPACITOR CH 25V 0.47U	1	
C1020		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C1022		ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C1024		ECUX1C474ZFN	C.CAPACITOR CH 16V 0.47U	1	
C1025		ECUM1C104KBN	C.CAPACITOR CH 16V 0.1U	1	
C1026		ECEV1HA010	E.CAPACITOR 50V 1U	1	
C1027		ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C1028		ECEV1HAR47	E.CAPACITOR 50V 0.47U	1	
C1029		ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	
C1030		ECUX1H822KBV	C.CAPACITOR CH 50V 8200P	1	
C1031		ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	
C1032		ECUX1H822KBV	C.CAPACITOR CH 50V 8200P	1	
C1033-35		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	3	
C1036		ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	
C1037		ECUX1H822KBV	C.CAPACITOR CH 50V 8200P	1	
C1040,41		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	2	
C1042		ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C1043		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C1051		ECUX1C474ZFN	C.CAPACITOR CH 16V 0.47U	1	
C1057		ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C1058		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C1063		ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C1064		ECEV1CG470S	E.CAPACITOR CH 16V 47	1	
C1066		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C3001		ECEV0GA470	E.CAPACITOR 4V 47U	1	
C3002		ECUX1C105ZFM	C.CAPACITOR CH 50V 1U	1	
C3003		ECUX1H180JCV	C.CAPACITOR CH 50V 18P	1	
C3005		ECUM1E393KBN	C.CAPACITOR CH 25V 0.039U	1	
C3006		ECUX1H180JCV	C.CAPACITOR CH 50V 18P	1	
C3007		ECUX1H470JCV	C.CAPACITOR CH 50V 47P	1	
C3008		ECUX1H220JCV	C.CAPACITOR CH 50V 22P	1	
C3011		ECUX1H560JCV	C.CAPACITOR CH 50V 56P	1	
C3012		ECUX1H680JCV	C.CAPACITOR CH 50V 68P	1	
C3015		ECUX1H680JCV	C.CAPACITOR CH 50V 68P	1	
C3022		ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C3023		ECUX1H391JCV	C.CAPACITOR CH 50V 390P	1	
C3024		ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C3027		ECUX1H220JCV	C.CAPACITOR CH 50V 22P	1	
C3028		ECEV0GA471	E.CAPACITOR 4V 470U	1	
C3030		ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	
C3031		ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C3032		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C3033		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3035		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C3037		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3040		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C3041		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3042		ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C3043		ECUX1H221JCV	C.CAPACITOR CH 50V 220P	1	
C4001		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C4002		ECST1CY225Z	T.CAPACITOR 16V 2.2U	1	
C4003		ECUX1H122KBV	C.CAPACITOR CH 50V 1200P	1	ONLY:NV-R33A/B,R330EN
C4004		ECUX1C123KBV	C.CAPACITOR CH 16V 0.012U	1	
C4005		ECST1AY475Z	T.CAPACITOR 16V 4.7U	1	
C4006		ECST1EY474Z	T.CAPACITOR 25V 0.47U	1	
C4007		ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C4008		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C4010		ECUX1H822KBV	C.CAPACITOR CH 50V 8200P	1	ONLY:NV-R33A/B,R330EN
C4011		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C4012		ECST1CY225Z	T.CAPACITOR 16V 2.2U	1	
C4013,14		ECEV05A470	E.CAPACITOR 4V 47U	2	
C4015		ECUM1C223KBV	C.CAPACITOR CH 16V 0.022U	1	
C4016		ECUX1H682KBV	C.CAPACITOR CH 50V 6800P	1	
C4017		ECUM2A472JCM	C.CAPACITOR 100V 4700P	1	
C4018		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C4020		ECUM1C104KBN	C.CAPACITOR CH 16V 0.1U	1	
C4021		ECEV05A470	E.CAPACITOR 4V 47U	1	
C4502,03		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	2	
C4504,05		ECUM1C473KBV	C.CAPACITOR CH 16V 0.047U	2	
C4506,07		ECEV0GA330	E.CAPACITOR 4V 33U	2	
C4508,09		ECUM1C105MBM	C.CAPACITOR CH 16V 1U	2	
C4510,11		ECST0JY106Z	T.CAPACITOR 6.3V 10U	2	
C4512,13		ECEV05A470	E.CAPACITOR 4V 47U	2	
C4514-19		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	6	
C4520		ECST1CY225Z	T.CAPACITOR 16V 2.2U	1	
C4521		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C4522		ECEV05A470	E.CAPACITOR 4V 47U	1	
C4524,25		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	2	
C4526		ECEV0GA101	E.CAPACITOR 4V 100U	1	
C4527		ECUM1C224KBN	C.CAPACITOR CH 16V 0.22U	1	
C4528		ECUX1H271JCV	C.CAPACITOR CH 50V 270P	1	
C4532,33		ECST1CY335Z	T.CAPACITOR 16V 3.3U	2	
C4534		ECST0JX226Z	T.CAPACITOR 6.3V 22U	1	
C4535		ECST1AY475Z	T.CAPACITOR 16V 4.7U	1	
C4539-41		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	3	
C4542,43		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C4545,46		ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	2	
C4555		ECUX1H121JCV	C.CAPACITOR CH 50V 120P	1	
C5001		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5002,03		ECST0JY106Z	T.CAPACITOR 6.3V 10U	2	
C5004		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5009		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5010		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C5011		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5012		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C5013		ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C5014		ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	
C5015		ECUM1H153KBN	C.CAPACITOR CH 50V 0.015U	1	
C5016		ECUM1H273KBN	C.CAPACITOR CH 50V 0.027U	1	
C5017-29		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	13	
C5030		ECUM1C104ZFN	C.CAPACITOR CH 16V 0.1U	1	
C5031		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5032,33		ECUM1C104ZFN	C.CAPACITOR CH 16V 0.1U	2	
C5034		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C5035		ECUM1C104KXV	C.CAPACITOR CH 16V 0.1U	1	
C5036,37		ECUM1C104ZFN	C.CAPACITOR CH 16V 0.1U	2	
C5038,39		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	2	
C5040-42		ECUX1H471JCV	C.CAPACITOR CH 50V 470P	3	
C5044		ECUX1H270JCV	C.CAPACITOR CH 50V 27P	1	
C5046,47		ECUX1H270JCV	C.CAPACITOR CH 50V 27P	2	
C5048		ECUM1C683KBN	C.CAPACITOR CH 16V 0.068U	1	
C5051		ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C5052		ECUX1H121JCV	C.CAPACITOR CH 50V 120P	1	
C5053		ECUX1H151JCV	C.CAPACITOR CH 50V 150P	1	
C5054		ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C5055		ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C5056		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5058		ECUM1C104KXV	C.CAPACITOR CH 16V 0.1U	1	
C5059,60		ECUM1H104ZFN	C.CAPACITOR CH 16V 0.1U	2	
C5062		ECUX1H270JCV	C.CAPACITOR CH 50V 27P	1	
C5063		ECUM1C104KBN	C.CAPACITOR CH 16V 0.1U	1	
C5085		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C5086		ECUM1C104KBN	C.CAPACITOR CH 16V 0.1U	1	
C5100		ECUM1C104KBN	C.CAPACITOR CH 16V 0.1U	1	
C5101		ECUX1H152KBV	C.CAPACITOR CH 50V 1500P	1	
C5102		ECUX1H391JCV	C.CAPACITOR CH 50V 390P	1	
C5501		ECUX1H332KBV	C.CAPACITOR CH 50V 3300P	1	
C5502		ECUX1H680JCV	C.CAPACITOR CH 50V 68P	1	
C5503		ECST0JY475Z	T.CAPACITOR 6.3V 4.7U	1	
C5504		ECUX1H822KBV	C.CAPACITOR CH 50V 8200P	1	
C5505		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C5507,08		ECUX1H101JCV	C.CAPACITOR CH 50V 100P	2	
C5510		ECUX1H820JCV	C.CAPACITOR CH 50V 82P	1	
C5511		ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C5512		ECUX1H820JCV	C.CAPACITOR CH 50V 82P	1	
C5513		ECUX1H221JCV	C.CAPACITOR CH 50V 220P	1	
C5514		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5515		ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C5520		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5521		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C5522		ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C5523		ECUX1H820JCV	C.CAPACITOR CH 50V 82P	1	
C5524		ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C5525		ECUX1H120JCV	C.CAPACITOR CH 50V 12P	1	
C5526		ECUX1H060CCV	C.CAPACITOR CH 50V 6P	1	
C5527		ECUX1H100CCV	C.CAPACITOR CH 50V 10P	1	
C5530		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C5531		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5532		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C5533		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C5534-37		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	4	
C5538,39		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C5541		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5542		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6001-04		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	4	
C6005		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C6006,07		ECUX1H120JCV	C.CAPACITOR CH 50V 12P	2	
C6008		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6009		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C6010		ECEV1CA470P	E.CAPACITOR 16V 47U	1	
C6011		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6014,15		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C6017		ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C6018		ECUX1H180JCV	C.CAPACITOR CH 50V 18P	1	
C6019		ECUX1H060CCV	C.CAPACITOR CH 50V 6P	1	
C6022,23		ECUX1H221JCV	C.CAPACITOR CH 50V 220P	2	
C6024,25		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C6027		ECEV0GA101	E.CAPACITOR 4V 100U	1	
C6028		ECST0JX226Z	T.CAPACITOR 6.3V 22U	1	
C6029		ECUM1C104KBN	C.CAPACITOR CH 16V 0.1U	1	
C6030		ECUX1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C6031,32		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C6038		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C6039		ECUX1H010CCV	C.CAPACITOR CH 50V 1P	1	
C6040		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6060		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C6062		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C6100		ECEV1CA100	E.CAPACITOR 16V 10U	1	
C6201		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6203		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C6204,05		ECUM1C105KBM	C.CAPACITOR CH 16V 1U	2	
C6206		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6207,08		ECEV1CA100	E.CAPACITOR 16V 10U	2	
C6209		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6210		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C6211		ECUX1H223ZFV	C.CAPACITOR CH 50V 0.022U	1	
C6213		ECEV05A470	E.CAPACITOR 4V 47U	1	
C6214		ECUX1H561JCV	C.CAPACITOR CH 50V 560P	1	
C6221		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6230		ECEV0JA220	E.CAPACITOR 6.3V 22U	1	
D200		1SS355	DIODE	1	
D201		MA728	DIODE	1	
D202,03		1SS355	DIODE	2	
D204		MA729	DIODE	1	
D205-10		1SS355	DIODE	6	
D211-13		MA728	DIODE	3	
D214		1SS355	DIODE	1	
D301-09		MA728	DIODE	9	
D701		MA132K	DIODE	1	
D1002		SFPB-76	DIODE	1	
D1004		EC10QS04	DIODE	1	
D1005		SB05-05CP	DIODE	1	
D1006,07		MA132K	DIODE	2	
D1008		MA728	DIODE	1	
D1012		MA133	DIODE	1	
D1015		MA738	DIODE	1	
D1062		SB05-05CP	DIODE	1	
D1064		MA728	DIODE	1	
D4501		MA133	DIODE	1	
D4502		1SS355	DIODE	1	
D5001,02		MA132WA	DIODE	2	
D5003		1SS355	DIODE	1	
D5502		1SS355	DIODE	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
D6002		MA132WA	DIODE	1	
D6003		MA728	DIODE	1	
D6004		1SS355	DIODE	1	
D6008		1SS355	DIODE	1	
D6011		MA132WK	DIODE	1	
D6012,13		MA132WA	DIODE	2	
D6015		MA728	DIODE	1	
D6016		MA133	DIODE	1	
D6018		MA728	DIODE	1	
D6201		1SS355	DIODE	1	
D6300		MA728	DIODE	1	
FL201		ELB3H018	FILTER	1	
FL3002		VLF1057	FILTER	1	
FP301		VJS2848D010	CONNECTOR (FEMALE) 10P	1	
FP701		VJS3319D018	CONNECTOR (FEMALE) 18P	1	
FP4001		VJS2958D009	CONNECTOR (FEMALE) 9P	1	
FP4003		VJS2907B010	CONNECTOR (FEMALE) 10P	1	
FP5001		VJS2959B023	CONNECTOR (FEMALE) 23P	1	
FP6001		VJS2959B016	CONNECTOR (FEMALE) 16P	1	
FP6002		VJS2959B006	CONNECTOR (FEMALE) 6P	1	
FP6005		VJS3320D022	CONNECTOR (FEMALE) 22P	1	
FP6006		VJS2959D011	CONNECTOR (FEMALE) 11P	1	
IC201		VEFH43A	IC	1	
IC202		MN5225	IC	1	
IC203		AN2018S	IC	1	
IC204		AN2033FAP	IC	1	
IC207		TC7SU04F	IC	1	
IC208-11		SC7S08F	IC	4	
IC301		MN67333	IC	1	
IC302		MN67323	IC	1	
IC303		MN67332	IC	1	
IC305		MN1866405M4B	IC	1	
IC307		M62352GP	IC	1	
IC308		M62353GP	IC	1	
IC309		X25040S-3C70	IC	1	
IC315		MN65703T	IC	1	
IC705		BA6950FS	IC	1	
IC706,07		LM324DB	IC	2	
IC708		TB6512AF	IC	1	
IC1001		BA9706K	IC	1	
IC3001		VEFH32E	IC	1	
IC3002		TC7W04F	IC	1	
IC4501		AN3959FHP	IC	1	
IC5001		AN3352FHP	IC	1	
IC5501		LC89970MD	IC	1	
IC6001		MN6755324M4G	IC	1	
IC6002		S3510ANFJ	IC	1	
IC6003		UPD6462GS613	IC	1	
IC6004		UPD4066BG	IC	1	
IC6005		BA6289F	IC	1	
IC6006		TA75W393FU	IC	1	
IC6007		RH5RE38AA	IC	1	
IC6008		PST9133NR	IC	1	
IC6009		TC4S66F	IC	1	
IC6011		TC4S66F	IC	1	
L201		ELJPC6R8KB	COIL 6.8UH	1	
L202		VLP0146	INDUCTOR	1	
L203-06		ELJFC150JB	COIL 15UH	4	
L208		VLP0146	INDUCTOR	1	
L209		VLQ0426J680	COIL 68UH	1	
L210		ELJFC150JB	COIL 15UH	1	
L211		VLQ0426J680	COIL 68UH	1	
L215		VLP0154	INDUCTOR	1	
L220		VLP0146	INDUCTOR	1	
L230,31		VLP0154	INDUCTOR	2	
L301		VLQ0426J120	COIL 12UH	1	
L302-07		ELJPC6R8KB	COIL 6.8UH	6	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
L308		VLP0146	INDUCTOR	1	
L309		VLP0140	INDUCTOR	1	
L310,11		ELJPC6R8KB	COIL 6.8UH	2	
L312		ELJPA6R8MF	COIL 6.8UH	1	
L313,14		VLP0140	INDUCTOR	2	
L315-17		ELJPC6R8KB	COIL 6.8UH	3	
L318,19		VLP0175	INDUCTOR	2	
L320		VLP0140	INDUCTOR	1	
L321		ELJPC6R8KB	COIL 6.8UH	1	
L701		ELJPC6R8KB	COIL 6.8UH	1	
L703		ELJPC6R8KB	COIL 6.8UH	1	
L706,07		ELJPC6R8KB	COIL 6.8UH	2	
L1001		ELL04T509R	COIL 1UH	1	
L1002		ELL04T016R	COIL 21UH	1	
L1003		ELC6UB4R7M	COIL 4.7UH	1	
L1006		ELJPA470KB	COIL 47UH	1	
L1007		ELL04T045R	COIL 90UH	1	
L1008		ELC6UB4R7M	COIL 4.7UH	1	
L1009		ELJPA100KB	COIL 10UH	1	
L1010,11		ELJPA101KB	COIL 100UH	2	
L1012		ELJPA100KB	COIL 10UH	1	
L1014		ELJPA100KB	COIL 10UH	1	
L1015		ELJPA150KB	COIL 15UH	1	
L1062		ELL04T035R	COIL 180UH	1	
L3001		VLQ0426J560	COIL 56UH	1	
L3002		ELJPA101KB	COIL 100UH	1	
L3003		ELJFA820JB	COIL 82UH	1	
L3005		ELJPA121KF	COIL 120UH	1	
L3006		ELJFA121JB	COIL 120UH	1	
L3011		VLQ0426J330	COIL 33UH	1	
L3012		ELJFC150JB	COIL 15UH	1	
L3013		ELJFA151JB	COIL 150UH	1	
L3014		ELJFA220JB	COIL 22UH	1	
L3015		ELJPA101KB	COIL 100UH	1	
L3016		VLQ0426J470	COIL 47UH	1	
L3021		ELJPA101KB	COIL 100UH	1	
L3022		VLQ0426J330	COIL 33UH	1	
L4001		ELJPA470KB	COIL 47UH	1	
L4002		VLQ0423J153	COIL 15MH	1	
L4003		ELJPA101KB	COIL 100UH	1	
L4501		ELJPA330KB	COIL 33UH	1	
L5001-04		ELJPA101KB	COIL 100UH	4	
L5006		VLQ0401K120	COIL 12UH	1	
L5007,08		ELJPA101KB	COIL 100UH	2	
L5010		ELJPA101KB	COIL 100UH	1	
L5501		ELJPA470KB	COIL 47UH	1	
L5502		ELJPA150KB	COIL 15UH	1	
L5503		VLQ0426J470	COIL 47UH	1	
L5504		VLQ0426J270	COIL 27UH	1	
L5505,06		ELJFC100JB	COIL 10UH	2	
L5507		ELJPA150KB	COIL 15UH	1	
L5511		ELJFA101JB	COIL 100UH	1	
L6001		ELJFA330JB	COIL 33UH	1	
L6002		ELJPA101KB	COIL 100UH	1	
P303		VJP3172B006	CONNECTOR (MALE) 6P	1	
P4004		VJP3172B005	CONNECTOR (MALE) 5P	1	
PP201		VJP3359D012	CONNECTOR (MALE) 12P	1	
PP302		VJP2962A024	CONNECTOR (MALE) 24P	1	
PP4002		VJP3295D010	CONNECTOR (MALE) 10P	1	
PP6004		VJP3358C016	CONNECTOR (MALE) 16P	1	
PS1001		VJS2961A030	CONNECTOR (FEMALE) 30P	1	
Q201		2SD1819	TRANSISTOR	1	
Q204		2SB1462	TRANSISTOR	1	
Q206		2SC4627	TRANSISTOR	1	
Q207		XP1401	TRANSISTOR-RESISTOR	1	
Q208		XP4601	TRANSISTOR-RESISTOR	1	
Q209-11		XP4654	TRANSISTOR-TRANSISTOR	3	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
Q301,02		2SD2216	TRANSISTOR	2	
Q303		2SD1030	TRANSISTOR	1	
Q304		XP4601	TRANSISTOR-RESISTOR	1	
Q304		XP4601	TRANSISTOR-RESISTOR	1	
Q704		2SD601A	TRANSISTOR	1	
Q705		2SD2216	TRANSISTOR	1	
Q1001		2SA1731-R	TRANSISTOR	1	
Q1002,03		2SB798	TRANSISTOR	2	
Q1004		2SD2210	TRANSISTOR	1	
Q1005		2SB1073	TRANSISTOR	1	
Q1006		2SD1819	TRANSISTOR	1	
Q1062		2SB798	TRANSISTOR	1	
Q3001		XN4501	TRANSISTOR-RESISTOR	1	
Q3002		XN4401	TRANSISTOR-RESISTOR	1	
Q3005		2SB1462	TRANSISTOR	1	
Q3006		2SB970X	TRANSISTOR	1	
Q3011,12		2SC4627	TRANSISTOR	2	
Q3013		2SD2216	TRANSISTOR	1	
Q3020,21		2SB1462	TRANSISTOR	2	
Q3022		2SC4627	TRANSISTOR	1	
Q3204		XP4601	TRANSISTOR-RESISTOR	1	
Q4001		2SD2216	TRANSISTOR	1	
Q4002		2SD602-R	TRANSISTOR	1	(R)
Q4003		2SD2216	TRANSISTOR	1	
Q4004		XP4501	TRANSISTOR-RESISTOR	1	
Q4005		2SB1219	TRANSISTOR	1	
Q4007		2SB1462	TRANSISTOR	1	
Q4501,02		2SD1979	TRANSISTOR	2	
Q4503,04		2SD2216	TRANSISTOR	2	
Q4515,16		XP4601	TRANSISTOR-RESISTOR	2	
Q5001,02		XN4504	TRANSISTOR-TRANSISTOR	2	
Q5004,05		2SA812	TRANSISTOR	2	
Q5006,07		XN1501	TRANSISTOR-TRANSISTOR	2	
Q5502		2SB1462	TRANSISTOR	1	
Q5503		2SD2216	TRANSISTOR	1	
Q5504		2SB1462	TRANSISTOR	1	
Q5505		2SD2216	TRANSISTOR	1	
Q5506		2SC4627	TRANSISTOR	1	
Q6002		2SD2216	TRANSISTOR	1	
Q6003		2SB798	TRANSISTOR	1	
Q6004		2SD2216	TRANSISTOR	1	
Q6005		XP6501	TRANSISTOR-RESISTOR	1	
Q6006		2SB1462	TRANSISTOR	1	
Q6007		2SD2216	TRANSISTOR	1	
Q6008		XP1501	TRANSISTOR-RESISTOR	1	
Q6201		2SB1462	TRANSISTOR	1	
Q6202		2SC4627	TRANSISTOR	1	
QR301,02		UN9212	TRANSISTOR-RESISTOR	2	
QR303-05		UN9213	TRANSISTOR-RESISTOR	3	
QR307		XP1212	TRANSISTOR-TRANSISTOR	1	
QR701		UN9211	TRANSISTOR-RESISTOR	1	
QR710		UN9213	TRANSISTOR-RESISTOR	1	
QR1006		UN2130X	TRANSISTOR-RESISTOR	1	
QR1061		UN9115	TRANSISTOR-RESISTOR	1	
QR3001		UN9212	TRANSISTOR-RESISTOR	1	
QR3003		UN9213	TRANSISTOR-RESISTOR	1	ONLY:NV-R33A/B,R330EN
QR3004		UN9212	TRANSISTOR-RESISTOR	1	ONLY:NV-R33A/B,R330EN
QR3005		UN9212	TRANSISTOR-RESISTOR	1	
QR4003		UN9112	TRANSISTOR-RESISTOR	1	
QR4004		UN9210	TRANSISTOR-RESISTOR	1	
QR4005		UN9213	TRANSISTOR-RESISTOR	1	ONLY:NV-R33A/B,R330EN
QR4501		UN9113	TRANSISTOR-RESISTOR	1	
QR4502		UN9212	TRANSISTOR-RESISTOR	1	
QR4503		XP1213	TRANSISTOR-RESISTOR	1	
QR4504		UN9213	TRANSISTOR-RESISTOR	1	
QR5001,02		XP1213	TRANSISTOR-RESISTOR	2	
QR5003		UN2130X	TRANSISTOR-RESISTOR	1	
QR5005		UN9213	TRANSISTOR-RESISTOR	1	
QR5010		UN2130X	TRANSISTOR-RESISTOR	1	
QR5011		UN9211	TRANSISTOR-RESISTOR	1	
QR5501		UN9213	TRANSISTOR-RESISTOR	1	
QR6001		UN2130X	TRANSISTOR-RESISTOR	1	
QR6002		XP4212	TRANSISTOR-RESISTOR	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
QR6003		UN9112	TRANSISTOR-RESISTOR	1	
QR6004		XP4115	TRANSISTOR-RESISTOR	1	
QR6005		UN9213	TRANSISTOR-RESISTOR	1	
QR6006		UN9212	TRANSISTOR-RESISTOR	1	
QR6007		UN9211	TRANSISTOR-RESISTOR	1	
QR6008		UN9113	TRANSISTOR-RESISTOR	1	
QR6009		UN2130X	TRANSISTOR-RESISTOR	1	
QR6010		XP1213	TRANSISTOR-RESISTOR	1	
QR6011		UN9212	TRANSISTOR-RESISTOR	1	
QR6013		UN9115	TRANSISTOR-RESISTOR	1	
QR6014		UN921D	TRANSISTOR-RESISTOR	1	
QR6015		UN9215	TRANSISTOR-RESISTOR	1	
QR6016,17		UN9213	TRANSISTOR-RESISTOR	2	
QR6018		UN921E	TRANSISTOR-RESISTOR	1	
R200		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R201		ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R202		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R203		ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1	
R204		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R205		ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1	
R207		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R208,09		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	2	
R210		ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R211		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R213,14		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	2	
R215,16		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R217		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R219		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R220		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R223		ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R224		ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R225		ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R226		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R227,28		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R231		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R232		ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R233		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R234		ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R236		ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R237		ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R238		ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R239		ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R241,42		ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	2	
R243		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R244		ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R245		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R246		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R247		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R249		ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R250		ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R251		ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R252		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R253		ERJ3GEYJ823	M.RESISTOR CH 1/16W 82K	1	
R254		ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R255		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R256		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R257		ERJ3GEYJ184	M.RESISTOR CH 1/16W 180K	1	
R258		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R260		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R261		ERJ8GEYJ4R7	M.RESISTOR CH 1/8W 4.7	1	
R262-64		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	3	
R265		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R266		ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R267		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R268		ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R269,70		ERJ3GEYJ330	M.RESISTOR CH 1/16W 33	2	
R271		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R272,73		ERJ3GEYJ330	M.RESISTOR CH 1/16W 33	2	
R274		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R275		ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R276,77		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R278		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R279		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R282		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R285,86		ERJ3GEYJ330	M.RESISTOR CH 1/16W 33	2	
R287,88		ERJ3GEYJ390	M.RESISTOR CH 1/16W 39	2	
R290,91		ERJ3GEYJ330	M.RESISTOR CH 1/16W 33	2	
R292,93		ERJ3GEYJ390	M.RESISTOR CH 1/16W 39	2	
R298		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R299		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R301		ERJ3GEYJ271	M.RESISTOR CH 1/16W 270	1	
R302		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R304		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R305		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R306,07		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	2	
R308		ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R309		ERJ3GEYJ4R7	M.RESISTOR CH 1/16W 4.7	1	
R310		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R311		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R312,13		ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	2	
R314-17		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	4	
R318,19		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R320		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R321-23		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	3	
R324		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R325,26		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R327		ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R328		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R329		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R330		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R331,32		ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	2	
R333		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R334,35		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R336		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R337		ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R338		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R339		ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R340-42		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	3	
R343		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R344,45		ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	2	
R346-49		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	4	
R350,51		ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	2	
R352		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R353,54		ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	2	
R355		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R356		ERJ3GEYJ395	M.RESISTOR CH 1/16W 3.9M	1	
R357		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R358,59		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R360,61		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R362		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R363		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R371		ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R372		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R373		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R374		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R702		VRE0071E102	M.RESISTOR CH 1/10W 1K	1	
R703		VRE0071E152	M.RESISTOR CH 1/10W 1.5K	1	
R704		VRE0071E471	M.RESISTOR CH 1/10W 470	1	
R705		ERJ3GEYJ220	M.RESISTOR CH 1/16W 22	1	
R716		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R717		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R718		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R719		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R720,21		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R722		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R723		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R724		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R725		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R726		ERJ3GEYG202	M.RESISTOR CH 1/16W 2K	1	
R727		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R728		ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R729		ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R730		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R731,32		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	2	
R733		ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R734,35		ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	2	
R736		ERJ3GEYJ824	M.RESISTOR CH 1/16W 820K	1	
R737		ERJ3GEYJ394	M.RESISTOR CH 1/16W 390K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R738		ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R739		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R740		ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R741		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R742		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R743		ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R744		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R745		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R746		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R747		ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1	
R748		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R749		ERJ3GEYG103	M.RESISTOR CH 1/16W 10K	1	
R750		ERJ3GEYG303	M.RESISTOR CH 1/16W 30K	1	
R752		ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1	
R756		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R757		ERJ3GEYG113	M.RESISTOR CH 1/16W 11K	1	
R758		ERJ3GEYG183	M.RESISTOR CH 1/16W 18K	1	
R760		ERJ3GEYJ3R3	M.RESISTOR CH 1/16W 3.3	1	
R761		ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R764		ERJ3GEYJ3R3	M.RESISTOR CH 1/16W 3.3	1	
R777		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R778		VRE0071E223	M.RESISTOR CH 1/10W 22K	1	
R779		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R781		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R782		ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R1001		VRE0067G822	M.RESISTOR CH 1/10W 8.2K	1	
R1002		VRE0067G272	M.RESISTOR CH 1/10W 2.7K	1	
R1003		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R1004		ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R1005		VRE0067G562	M.RESISTOR CH 1/10W 5.6K	1	
R1006		VRE0067G272	M.RESISTOR CH 1/10W 2.7K	1	
R1007		ERJ8GEYJ330	M.RESISTOR CH 1/8W 33	1	
R1008		VRE0067G103	M.RESISTOR CH 1/10W 10K	1	
R1009		VRE0067G152	M.RESISTOR CH 1/10W 1.5K	1	
R1010		ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R1012		VRE0067G20C	M.RESISTOR CH 1/10W 20	1	
R1013		VRE0067G393	M.RESISTOR CH 1/10W 39K	1	
R1014,15		VRE0067G182	M.RESISTOR CH 1/10W 1.8K	2	
R1016		VRE0034E153	M.RESISTOR CH 1/10W 15K	1	
R1017		ERJ6GEYJ102	M.RESISTOR CH 1/10W 1K	1	
R1018		ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	
R1019		ERJ6GEYJ102	M.RESISTOR CH 1/10W 1K	1	
R1020		ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	
R1021		ERJ3GEYJ330	M.RESISTOR CH 1/16W 33	1	
R1022		ERJ3GEYJ150	M.RESISTOR CH 1/16W 15	1	
R1023		ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R1024		ERJ3GEYJ470	M.RESISTOR CH 1/16W 47	1	
R1025		ERJ6GEYJ102	M.RESISTOR CH 1/10W 1K	1	
R1026		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R1027		ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	
R1028		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R1029		ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R1033		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R1035		ERJ3GEYJ470	M.RESISTOR CH 1/16W 47	1	
R1038		VRE0034E750	M.RESISTOR CH 1/10W 75	1	
R1039		VRE0034E431	M.RESISTOR CH 1/10W 430	1	
R1040		VRE0034E151	M.RESISTOR CH 1/10W 150	1	
R1051		VRE0071E273	M.RESISTOR CH 1/10W 27K	1	
R1052		VRE0071E473	M.RESISTOR CH 1/10W 47K	1	
R1062		ERJ6GEYJ391	M.RESISTOR CH 1/10W 390	1	
R1063		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R1065		ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R1071		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R1072		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R1073		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R1080		ERJ8GEY0R00	M.RESISTOR CH 1/8W 0	1	
R3001		ERJ3GEYJ750	M.RESISTOR CH 1/16W 75	1	
R3002		ERJ3GEYJ225	M.RESISTOR CH 1/16W 2.2M	1	
R3003,04		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	2	
R3005		ERJ3GEYJ271	M.RESISTOR CH 1/16W 270	1	
R3007		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	ONLY:NV-R33A/B,R330EN
R3008		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	ONLY:NV-R33A/B,R330EN
R3009		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R3010		ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R3015,16		ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	2	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R3017		ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R3018		ERJ3GEYJ271	M.RESISTOR CH 1/16W 270	1	
R3019		ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	1	
R3021,22		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R3023,24		ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	2	
R3025,26		ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	2	
R3027		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R3028		ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R3029		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R3032		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R3035		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R3036		ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	1	
R3037		ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R3038		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3040		ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1	
R3050		ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R3051		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R3057		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R3058		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R3059		ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	1	
R3060		ERJ3GEYJ680	M.RESISTOR CH 1/16W 68	1	
R3062		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3063,64		ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	2	
R3071,72		ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	2	
R3073		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3074		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R3081		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R3082		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R3086		ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R3090,91		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	2	
R3238		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3240-42		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	3	
R3243		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R4001		ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	1	
R4002		ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R4003		VRE0071E271	M.RESISTOR CH 1/10W 270	1	
R4004		ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
R4005		VRE0071E682	M.RESISTOR CH 1/10W 6.8K	1	
R4006		ERJ3GEYJ823	M.RESISTOR CH 1/16W 82K	1	
R4007		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R4009		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R4010		ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1	
R4012		ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	ONLY:NV-R33A/B,R330EN
R4015-17		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	3	
R4018		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R4019,20		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	2	
R4021		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4022		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R4023		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4024		ERJ3GEYJ680	M.RESISTOR CH 1/16W 68	1	
R4025		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R4026		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R4027		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R4028		ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R4029		VRE0034E133	M.RESISTOR CH 1/10W 13K	1	
R4501		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R4502,03		ERJ3GEYJ511	M.RESISTOR CH 1/16W 510	2	
R4504,05		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R4506		ERJ3GEYJ684	M.RESISTOR CH 1/16W 680K	1	
R4507		ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R4508,09		ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	2	
R4510,11		ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	2	
R4512,13		ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	2	
R4514		ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1	
R4516		VRE0071E153	M.RESISTOR CH 1/10W 15K	1	
R4517		VRE0071E123	M.RESISTOR CH 1/10W 12K	1	
R4518		ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R4519		ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	1	
R4520		ERJ3GEYJ394	M.RESISTOR CH 1/16W 390K	1	
R4521		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4524		ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1	
R4525		ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R4526,27		ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	2	
R4528,29		ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	2	
R4530,31		ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	2	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R4532		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R4537		ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R4538		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4541		ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R4542		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R4543,44		ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	2	
R4545		ERJ3GEYJ271	M.RESISTOR CH 1/16W 270	1	
R4546		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4547,48		ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	2	
R4549,50		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R4551,52		ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	2	
R4553,54		ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	2	
R5001		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R5002		ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R5003		ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R5005		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R5006-08		ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	3	
R5011		ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	1	
R5013		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R5014		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R5015,16		ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	2	
R5024		ERJ6GEYJ4R7	M.RESISTOR CH 1/10W 4.7	1	
R5025		ERJ3GEYJ271	M.RESISTOR CH 1/16W 270	1	
R5026		ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1	
R5027		ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1	
R5028		ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R5029,30		ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	2	
R5033		ERJ3GEYJ155	M.RESISTOR CH 1/16W 1.5M	1	
R5055,56		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R5070		ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R5071		ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R5100		ERJ3GEYJ274	M.RESISTOR CH 1/16W 270K	1	
R5501,02		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R5503		ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R5504		ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	1	
R5505		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R5507		ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R5510		ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R5511		ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R5512		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R5513		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R5514,15		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R5516		ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R5517		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R5518		ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R5520,21		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R5526		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R5527		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R5528		ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1	
R5529		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R5530,31		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R5532		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R5533		ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R5534		ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R5537		VRE0071E271	M.RESISTOR CH 1/10W 270	1	
R5540		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R5541		ERJ3GEYJ823	M.RESISTOR CH 1/16W 82K	1	
R5543,44		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	2	
R5546,47		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R5548		VRE0071E271	M.RESISTOR CH 1/10W 270	1	
R5549		VRE0071E153	M.RESISTOR CH 1/10W 15K	1	
R5550,51		ERJ3GEYJ750	M.RESISTOR CH 1/16W 75	2	
R5552,53		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	2	
R5554		ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1	
R5556		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R6003		ERJ3GEYJ274	M.RESISTOR CH 1/16W 270K	1	
R6004		ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R6005		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R6006		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6007		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R6008		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6009		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R6010		VRE0071E272	M.RESISTOR CH 1/10W 2.7K	1	
R6011		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6012		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R6013		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6014		ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R6015		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6016		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R6017		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R6018		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R6019		ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R6020		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R6021		ERJ8GEYJ120	M.RESISTOR CH 1/8W 12	1	
R6022		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R6023		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R6024		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6025		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6026		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R6027,28		ERJ6GEYJ221	M.RESISTOR CH 1/10W 220	2	
R6029		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R6030		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R6031		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R6032,33		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R6034		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R6035		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6036		VRE0071E221	M.RESISTOR CH 1/10W 220	1	
R6037		VRE0067G562	M.RESISTOR CH 1/10W 5.6K	1	
R6038		VRE0067G561	M.RESISTOR CH 1/10W 560	1	
R6039		ERJ8GEYJ2R2	M.RESISTOR CH 1/8W 2.2	1	
R6040		ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
R6042		ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R6043		ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R6044		VRE0034E223	M.RESISTOR CH 1/10W 22K	1	
R6045		VRE0034E333	M.RESISTOR CH 1/10W 33K	1	
R6046		VRE0067G562	M.RESISTOR CH 1/10W 5.6K	1	
R6048,49		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	2	
R6050		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6052-54		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	3	
R6055		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6056		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R6057		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R6058,59		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	2	
R6060		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R6061		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R6062		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R6063		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6064		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R6066		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6067		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R6068		ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R6069		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R6070		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R6071		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R6072		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6073		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R6074		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6075		ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R6076		ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R6078		ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R6080		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	ONLY:NV-R33E
R6080		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	ONLY:NV-R33A/B,R330EN
R6090,91		ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	2	
R6108		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6109		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R6111		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R6112		ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R6113		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R6120,21		ERJ6GEY0R00	M.RESISTOR CH 1/10W 0	2	
R6130		ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	1	
R6131		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6133		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R6134		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6135		ERJ3GEYJ121	M.RESISTOR CH 1/16W 120	1	
R6137		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R6138		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6139		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R6142		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6143		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R6144		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R6145		ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R6150		ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R6151		ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
R6152		ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1	
R6153		ERJ3GEYJ474	M.RESISTOR CH 1/16W 470K	1	
R6154		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R6155		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6161		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6170		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6171		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6174		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R6175		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6199		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6201		ERJ3GEYJ394	M.RESISTOR CH 1/16W 390K	1	
R6203		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6205		ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R6206,07		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	2	
R6208		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R6209		ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1	
R6210,11		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	2	
R6212		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6213		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R6214		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R6231		ERJ8GEYJ2R2	M.RESISTOR CH 1/8W 2.2	1	
R6233		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6234,35		ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	2	
R6309		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
RA301-04		EXBV8V102J	RESISTOR-RESISTOR	4	
RA305,06		EXBV8V473J	RESISTOR-RESISTOR	2	
RA308-12		EXBV8V102J	RESISTOR-RESISTOR	5	
RA314,15		EXBV8V102J	RESISTOR-RESISTOR	2	
RA6001		EXBV8V103J	RESISTOR-RESISTOR	1	
RA6003,04		EXBV4V102J	RESISTOR-RESISTOR	2	
RA6005-07		EXBV8V102J	RESISTOR-RESISTOR	3	
RA6008		EXBV4V683J	RESISTOR-RESISTOR	1	
RA6009		EXBV4V103J	RESISTOR-RESISTOR	1	
RA6010,11		EXBV4V683J	RESISTOR-RESISTOR	2	
RA6012		EXBV8V102J	RESISTOR-RESISTOR	1	
RA6014		EXBV4V683J	RESISTOR-RESISTOR	1	
RA6015		EXBV4V102J	RESISTOR-RESISTOR	1	
T1001		ELL04T064R	TRANSFORMER	1	
T1002		VTP0357	TRANSFORMER	1	
T4001		EIQ6QB008T	TRANSFORMER	1	
TH701		VRE0083	M.RESISTOR CH 1/10W	1	
VC201		ECRJA010A11	V.CAPACITOR	1	
VR3001		EVM7JGA00B23	V.RESISTOR	1	
VR3003		EVM7JSX10B52	V.RESISTOR	1	
VR4502,03		EVM7JGA00B54	V.RESISTOR	2	
X201		VSX0650	CRYSTAL OSCILLATOR	1	
X301		VSX0669	CRYSTAL OSCILLATOR	1	
X5501		VSX0563	CRYSTAL OSCILLATOR	1	
X6001		VSX0461	CRYSTAL OSCILLATOR	1	
X6002		VSX0601	CRYSTAL OSCILLATOR	1	
			MISCELLANEOUS		
		VSC3855	POWER SHIELD COVER (TOP)	1	
		VSC3906	POWER SHIELD COVER (BOTT.)	1	
		VSC4147	H.A. SHIELD COVER (TOP)	1	
		VSC4032	H.A. SHIELD COVER (BOTT.)	1	
		VSC4149	CAMERA SHIELD COVER (TOP)	1	
		VSC4150	CAMERA SHIELD COVER (BOTT.)	1	
		VSC4183	POWER HEAT SINK	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
		VMZ2371	POWER HEAT SINK BARRIER	1	
		VMZ2278	CAMERA BARRIER	1	
	■	VEP02418A	DRIVE C.B.A.		(RTL)
C2001		ECUM1C564KBM	C.CAPACITOR CH 16V 0.56U	1	
C2002		ECUM1C105KBM	C.CAPACITOR CH 16V 1U	1	
C2003		ECUX1H332KBV	C.CAPACITOR CH 50V 3300P	1	
C2004		ECUX1H470JCV	C.CAPACITOR CH 50V 47P	1	
C2005		ECUX1H152KBV	C.CAPACITOR CH 50V 1500P	1	
C2007		ECUM1C105KBM	C.CAPACITOR CH 16V 1U	1	
C2009		ECUM1C104KBN	C.CAPACITOR CH 16V 0.1U	1	
C2011		ECUX1E223KBV	C.CAPACITOR CH 25V 0.023U	1	
C2012		ECUM1C473KXV	C.CAPACITOR CH 16V 0.047U	1	
C2014		ECST1AY475Z	T.CAPACITOR 16V 4.7U	1	
C2015-17		ECUM1C104KBN	C.CAPACITOR CH 16V 0.1U	3	
C2018		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C2020-22		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	3	
C2023		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C2024		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C2025-27		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	3	
C2028		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
C2029-32		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	4	
C2033		ECUM1C185ZFN	C.CAPACITOR CH 16V 1.8U	1	
C2036		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C2040-42		ECUM1C473KXV	C.CAPACITOR CH 16V 0.047U	3	
FP2001		VJS2848D007	CONNECTOR (FEMALE) 7P	1	
FP2002		VJS2958B018	CONNECTOR (FEMALE) 18P	1	
FP2003		VJS3552D023	CONNECTOR (FEMALE) 23P	1	
IC2001		TB6513AF	IC	1	
IC2002,03		UN224	IC	2	
QR2001		ON2170-LM	TRANSISTOR-RESISTOR	1	
QR2002		UN5215	TRANSISTOR-RESISTOR	1	
R2001		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R2002		ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R2003		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R2004		ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R2005		ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R2006		ERJ3GEYJ474	M.RESISTOR CH 1/16W 470K	1	
R2007		ERJ8GEYJR47	M.RESISTOR CH 1/8W 0.47	1	
R2008		ERJ8GEYJR33	M.RESISTOR CH 1/8W 0.33	1	
R2009		ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R2010		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R2011		ERJ6GEYJ271	M.RESISTOR CH 1/10W 270	1	
R2012		ERJ3GEYJ684	M.RESISTOR CH 1/16W 680K	1	
R2014		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R2015		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R2016		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R2017		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R2018		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R2019,20		ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	2	
R2021		ERJ6GEYJ101	M.RESISTOR CH 1/10W 100	1	
R2022		ERJ8GEYJR33	M.RESISTOR CH 1/8W 0.33	1	
R2040-42		ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	3	
R2045,46		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	2	
R2050		ERJ3GEYJ564	M.RESISTOR CH 1/16W 560K	1	
			MISCELLANEOUS		
		VMD1842	REEL SENSOR STAND	1	
	■	VEP28106C	E.V.F. C.B.A.		(RTL)

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
B1601		VJP3126B030	CONNECTOR (MALE) 30P	1	
C801		ECQB1C104JB	P.CAPACITOR CH 16V 0.1U	1	
C802-04		ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	3	
C805		ECEA0JKE221	E.CAPACITOR 6.3V 220U	1	
C806		ECUX1C123KBV	C.CAPACITOR CH 16V 0.012U	1	
C807		ECUM1C105KBM	C.CAPACITOR CH 16V 1U	1	
C809		ECEV1CA470F	E.CAPACITOR 16V 47U	1	
C810		ECUM2A432JUM	C.CAPACITOR 100V 4300P	1	
C811		ECST1AD476Z	T.CAPACITOR 10V 47U	1	
C812		ECUX1H180JCV	C.CAPACITOR CH 50V 18P	1	
C813		ECUM2J221KBM	C.CAPACITOR 630V 220P	1	
C814		ECEV1HA010	E.CAPACITOR 50V 1U	1	
C815		ECUM2H331KBM	C.CAPACITOR 500V 330P	1	
C816		ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C831		ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C833		ECST0JX226Z	T.CAPACITOR 6.3V 22U	1	
C861		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C862		ECUX1H152KBV	C.CAPACITOR CH 50V 1500P	1	
C863		ECUX1H682KBV	C.CAPACITOR CH 50V 6800P	1	
C1603		ECEV1CA220	E.CAPACITOR 16V 22U	1	
D803		MA142WA	DIODE	1	
D1601		SFPB-72	DIODE	1	
D1602-04		MA8130M	DIODE	3	
IC801		AN2516S	IC	1	
J1601		VJJ0368	JACK	1	
J1602		VEK6424	JACK	1	
L801		ELJPA100KB	COIL 10UH	1	
L802		ELH8LE204R	COIL H	1	
L804		ELJFA680KB	COIL 68UH	1	
L805		ELJPA100KB	COIL 10UH	1	
L807		ELJPA100KB	COIL 10UH	1	
L1601,02		VLP0134	INDUCTOR	2	
P801		VJP3499D004	CONNECTOR (MALE) 4P	1	
P803		VJP3125B003	CONNECTOR (MALE) 3P	1	
P804		VJP1242T	CONNECTOR (MALE) 2P	1	
P1601		VJP3125D004	CONNECTOR (MALE) 4P	1	
P1602		VJP3125B002	CONNECTOR (MALE) 2P	1	
Q802		2SD968A-S	TRANSISTOR	1	
Q803,04		2SA1748	TRANSISTOR	2	
Q805,06		2SD2216	TRANSISTOR	2	
QR881		UN9212	TRANSISTOR-RESISTOR	1	
QR882		UN2130X	TRANSISTOR-RESISTOR	1	
R801		ERJ6ENF4422	M.RESISTOR CH 1/10W 2.2K	1	
R802		ERJ6GEYJ3R9	M.RESISTOR CH 1/10W 3.9	1	
R805		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R808		VRE0071E242	M.RESISTOR CH 1/10W 2.4K	1	
R809		ERJ3GEYJ564	M.RESISTOR CH 1/16W 560K	1	
R810		ERJ6GEYF104	M.RESISTOR CH 1/10W 100K	1	
R815		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R816,17		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R818		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R819,20		ERJ6GEYJ275	M.RESISTOR CH 1/10W 2.7M	2	
R821		ERJ6GEYJ105	M.RESISTOR CH 1/10W 1M	1	
R823		ERJ3GEYJ8R2	M.RESISTOR CH 1/16W 8.2	1	
R829		ERJ6ENF4222	M.RESISTOR CH 1/10W 2.2K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R833		ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R834		ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R835		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R840		ERJ8GEYJ685	M.RESISTOR CH 1/8W 6.8M	1	
R841,42		ERJ6GEYJ475	M.RESISTOR CH 1/10W 4.7M	2	
R843		ERJ3GEYJ564	M.RESISTOR CH 1/16W 560K	1	
R844		ERJ6GEYJ470	M.RESISTOR CH 1/10W 47	1	
R850		ERJ6ENF8201	M.RESISTOR CH 1/10W 8.2K	1	
R851		ERJ6ENF3901	M.RESISTOR CH 1/10W 3.9K	1	
R852		ERJ6GEYJ822	M.RESISTOR CH 1/10W 8.2K	1	
R853		ERJ6GEYJ103	M.RESISTOR CH 1/10W 10K	1	
R854		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R855		ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	
R861		ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R862		ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R863		ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R864		ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R883		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R890		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R899		ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1	
R1601		VSF0092	FUSE RESISTOR	1	<!>
R1602		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R1606		ERJ6GEYJ102	M.RESISTOR CH 1/10W 1K	1	
SW892		ESD165236	SWITCH	1	
SW895		ESE122	SWITCH	1	
SW896		VSS0392	SWITCH	1	
T801		ETF08L28A	TRANSFORMER	1	<!>
VR801		EVM7JGA00BE2	V.RESISTOR	1	
VR803		EVMLRGA00BV6	V.RESISTOR	1	
VR804		EVM7BSX30B26	V.RESISTOR	1	
Z1601		VL2020/1HF	LITHIUM BATTERY	1	
			MISCELLANEOUS		
		VEE9267	CRT SOCKET	1	
	■	VEK7346	FRONT OPERATION C.B.A.		(RTL)
FP501		VJS3645B010	CONNECTOR (FEMALE) 10P	1	
SW055		VSS0401	SWITCH	1	
VR501		EVJ4Y0FB4B15	V.RESISTOR	1	
	■	VEP22132C	CCD FLEX.CARD C.B.A.		(RTL)
B291		VJS3500C012	CONNECTOR (FEMALE) 12P	1	
C292		ECST1VX225Z	T.CAPACITOR 35V 2.2U	1	
C294		ECUM1E473ZFN	C.CAPACITOR 25V 0.047U	2	
C295		ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	1	
D291		MA153	DIODE	1	
Q291		2SC2295	TRANSISTOR	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R291		ERJ6GEYG560	M.RESISTOR CH 1/16W 56	1	
R292		ERJ6GEYF152	M.RESISTOR CH 1/16W 1.5K	1	
R293		ERJ6GEY0R00	M.RESISTOR CH 1/16W 0	2	
			MISCELLANEOUS		
		VJB22132	FLEX. CARD	1	
	■	VEK6690	LENS FLEX. CARD C.B.A.		(RTL)
			MISCELLANEOUS		
		ON1400-R	PHOTO SENSOR	1	
	■	VEK7290	MIC C.B.A. WITH ECM C.B.A.		(RTL)
C4804,05		ECUX1C333KBV	C.CAPACITOR CH 16V 0.033U	2	
C4806,07		ECUM1C823KBN	C.CAPACITOR CH 16V 0.082U	2	
C4808,09		ECUX1H820JCV	C.CAPACITOR CH 50V 82P	2	
C4810,11		ECUM1E473KBN	C.CAPACITOR CH 25V 0.047U	2	
C4812,13		ECUM1C183KBV	C.CAPACITOR CH 16V 0.018U	2	
C4814,15		ECUX1C123KBV	C.CAPACITOR CH 16V 0.012U	2	
C4816,17		ECST1CY105Z	T.CAPACITOR 16V 1U	2	
C4818,19		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	2	
C4820-22		ECEV05A470	E.CAPACITOR 4V 47U	3	
C4824		ECST0JY106Z	T.CAPACITOR 6.3V 10U	1	
D4805		RD5.6UM	DIODE	1	
IC4801		BA14741F	IC	1	
IR051		PH310	IR RECEIVER UNIT	1	
J4801		VJJ0319	JACK	1	
P4801		VJP3125D004	CONNECTOR (MALE) 4P	1	
P4802		VJP3172B005	CONNECTOR (MALE) 5P	1	
Q4801,02		2SC3929	TRANSISTOR	2	
Q4803,04		2SB1218A	TRANSISTOR	2	
Q4805,06		2SD1819A	TRANSISTOR	2	
R4801-03		ERJ6GEYJ332	M.RESISTOR CH 1/10W 3.3K	3	
R4804		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R4805		ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R4806		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R4807		ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R4808,09		ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	2	
R4810,11		ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	2	
R4812-15		ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	4	
R4816,17		ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	2	
R4818,19		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	2	
R4820,21		ERJ6GEYJ154	M.RESISTOR CH 1/10W 150K	2	
R4822,23		ERJ6GEYJ563	M.RESISTOR CH 1/10W 56K	2	
R4824,25		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R4826,27		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R4828,29		ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	2	
R4830,31		ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	2	
R4832		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4833		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R4834		ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R4835,36		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
			MISCELLANEOUS		
		VEE9241	CONNECTOR UNIT(MIC ~ MAIN)	1	
		VEE9152	CONNECTOR UNIT(ECM ~ MIC)	1	
		VSC4191	JACK SHIELD(FOR MIC C.B.A.)	1	
	■	VEP00U31B	AV JACK C.B.A.		(RTL)
B1501		VJS3294C010	CONNECTOR (FEMALE) 10P	1	
C1501		ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C1502		ECUM1H561JCN	C.CAPACITOR CH 50V 560P	1	
D1501		MA153	DIODE	1	
L1503-06		VLQ0584	COIL	4	
L1507		VLP0171	COIL	1	
			MISCELLANEOUS		
		VEJ1443	EARTH JACK PLATE	1	
		VMP4063	EARTH PLATE	1	
	■	VEK6711	EDIT 5P JACK UNIT		(RTL)
J1901		VJS3128	EDIT 5P	1	
			MISCELLANEOUS		
		VEE8840	EDIT 5P CONNECTOR UNIT	1	
	■	VEP00V80A	S/S & POWER SW C.B.A.		(RTL)
S6702		ESE103119	SWITCH	1	

Memo

INTERNAL REFERENCE CODES

NOTE: This chart is only for internal reference.
Do not order any parts according to these codes.

P.C.B.	FILM CODE
AV JACK	HOMF00-00U31
MAIN	HOMF00-23251
MIC	HOMF00-04492
DRIVE	HOMF00-02418
EVF	HOMF01-28106
FRONT OPERATION	HOMF00-00V40
CCD FLEXIBLE CARD	HOMF00-22132
S/S	HOMF00-00V80
EDIT 5P JACK	HOMF02-00U32
ECM	MF00-4493

ORDER NO. VMD9503M116

Service Manual

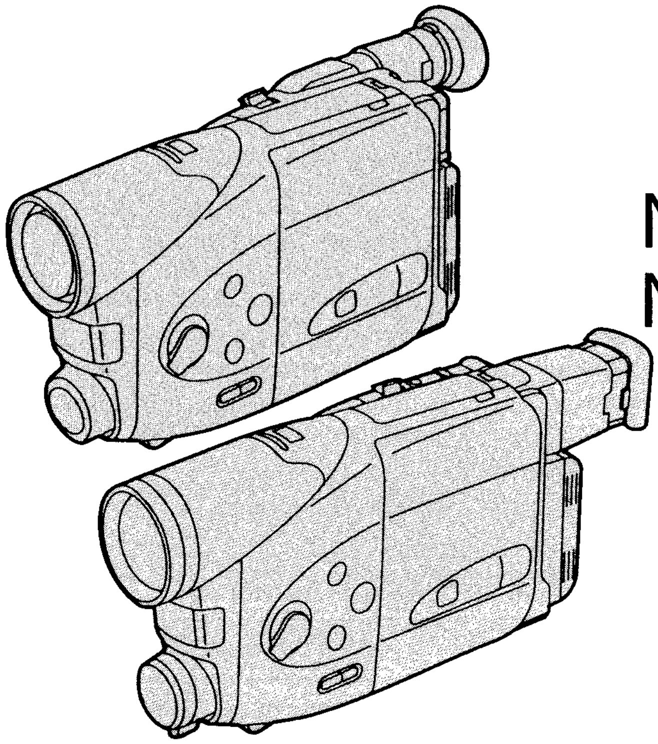
Adjustment Procedures (E.V.R.)

Panasonic VHS C

HQ

VHS-C Movie

NV-R55A/EE/R550EN
NV-R33A/B/E/R330EN



TEST EQUIPMENT AND TOOLS FOR E.V.R. ADJUSTMENT

ITEM	ORDER NO.	NOTE
1. TEST EQUIPMENT		
Oscilloscope	——	
Digital Volt Meter	——	
Frequency counter	——	
Vectorscope	——	
Colour Video Monitor	——	
Light Meter	——	
Tripod	——	
Lighting※	——	
Gray scale chart	——	Reflection type
Colour chip chart	——	
Hunting chart	VFK0546	
J chart & Ball chart	VFK0580	
Colour Bar chart	VFK0677	
Plastic Driver	——	

ITEM	ORDER NO.	NOTE
EVR Fixture	VFK0644	
ROM 29	VFK0701 ROM29	
Colour Temperature Conversion Filter	VFK0374 VFK0713	C12 Filter
	VFK0375 VFK0716	C2 Filter
Aligment Tape	VFM8180HUPF	PAL
2. Extension cables		
Connecting cable	VFK0766A	(5P)
Connecting cable	VFK0734W	(24P)
3. Movie Light Box	VRD931MLB	
4. Chart for Movie Light box		
Colour Bar chart	VFK0875S	
Gray scale chart	VFK0871S	

*: "A" 140-foot-candles (1400 lux) on the chart surface 3100°K

Panasonic

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⚠ **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

INTRODUCTION

This Manual contains adjustment procedure for using E.V.R which will allow service personneles to understand adjustment for using E.V.R of NV-R33/R55 Series. Follwing Item descrived on separete volume.

Model.No.	Order.No.	Contents
NV-R33 Series	VMD9501M106	SECTION 1 : General Description.
NV-R55 Series	VMD9503M115	SECTION 2 : Adjustment Procedure. ① Disassembly/assembly procedure ② Electric Adjustment for VCR section
		SECTION 3 : Block Diagram & Schematic Diagram
		SECTION 4 : Exploded View & Parts List

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1. SETUP FOR ADJUSTMENT

The standard setting and preparation for camera adjustment is as shown below.
NOTE: Fig.C1 for Adjustment of Camera Section

1). Prepare the test equipment and tools for Camera unit adjustment which listed on cover page.
2). Remove the side case refering disassembly method.(See Service Manual.)

3). Put the ROM IC(VFK0701ROM29) on the E.V.R Fixturte.
4). Connect the E.V.R Fixture and equipments as shown in Fig.C1.
5). Set the mode select switch on E.V.R fixture according to Model.No. as follows.

NV-R33A/B/E R330EN : Set the Mode Switch on E.V.R Fixture to "A" side.

NV-R55A/EE R550EN : Set the Mode Switch on E.V.R Fixture to "B" side.

6). Turn on the Movie Camera Power SW.

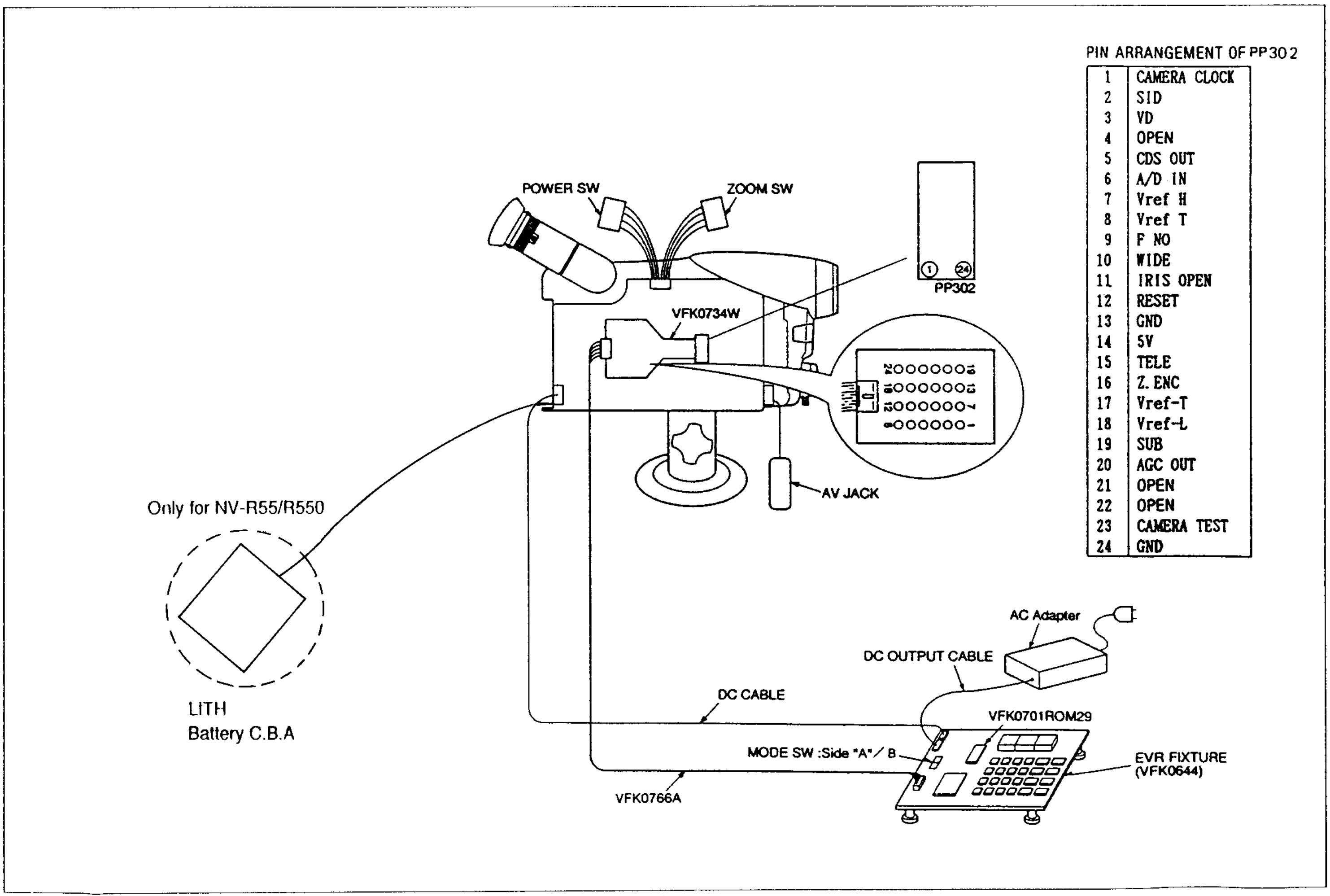
7). Turn on the E.V.R.Fixture Power SW.
The LED display on E.V.R. Fixture will indicate "08.80.00".

(If not, push the Reset button and/or check the cable connections between E.V.R./camera cable connections.
If an error is occurs, see next page at "Error Indication" part.)

8). Set the AE dial to"Manual".

9). Use 3100 degrees kelvin light source for lighting.
10). To trigger the oscilloscope, use Video out.

11). Service work for camera unit must be performed in a dust free location to maintain the lens cleanliness.


POWER SW
ZOOM SW
PP302
VFK0734W
AV JACK
Only for NV-R55/R550
LITH
Battery C.B.A
AC Adapter
DC OUTPUT CABLE
DC CABLE
VFK0701ROM29
MODE SW :Side "A"/ B
EVR FIXTURE
(VFK0644)
VFK0766A

PIN ARRANGEMENT OF PP302

1	CAMERA CLOCK
2	SID
3	VD
4	OPEN
5	CDS OUT
6	A/D IN
7	Vref H
8	Vref T
9	F NO
10	WIDE
11	IRIS OPEN
12	RESET
13	GND
14	5V
15	TELE
16	Z.ENC
17	Vref-T
18	Vref-L
19	SUB
20	AGC OUT
21	OPEN
22	OPEN
23	CAMERA TEST
24	GND

Fig.C1

2. E. V. R. & NEW ROM DESCRIPTION

2-1. GENERAL DESCRIPTION

The new ROM IC VFK0701ROM29 was developoped. Effective model is NV-R33A/B/E/R330EN and NV-R55A/EE/R550EN.

NV-R33A/B/E :Set the Mode Switch on E.V.R
R330EN Fixture to ”A” side.

NV-R55A/EE : Set the Mode Switch on E.V.R
R550EN Fixture to ”B” side.

2-2. MACRO OPERATION.

The following operation is provied to transfer the data by one touch.
Button to be pushed at same time.

【Mode SW : ”A” Side for NV−R33A/B/E/R330EN】

No.	Buttons to be pushed [Push these together]	OPERATIONS
1	[SHIFT 1] + [0]	Fully opens the IRIS.
2	[SHIFT 1] + [1]	Fully closes the IRIS.
3	[SHIFT 1] + [2]	IRIS is turned to Manual Condition.
4	[SHIFT 1] + [3]	IRIS is turned to Original Condition. (AUTO)
5	[SHIFT 1] + [4]	WHITE set.
6	[SHIFT 1] + [5]	Zooms to ”WIDE” position.
7	[SHIFT 1] + [6]	Stops the Zoom.
8	[SHIFT 1] + [7]	Zooms to ”TELE” position.
9	[SHIFT 1] + [8]	Carrier Balance data writing
10	[SHIFT 1] + [9]	Minimizes AGC Gain.
11	[SHIFT 1] + [A]	Maximizes AGC Gain.
12	[SHIFT 1] + [B]	AGC is returned to Original condition.
13	[SHIFT 1] + [C]	Focuses to ”MANUAL” Condition.
14	[SHIFT 1] + [D]	Focuses to ”AUTO” Condition.
15	[SHIFT 1] + [E]	Zoom tracking data writing.
16	[SHIFT 1] + [F]	Zoom speed calculation.
17	[SHIFT 2] + [0]	Turns FADE ON. (BLACK FADE).
18	[SHIFT 2] + [1]	Turns FADE OFF.
19	[SHIFT 2] + [2]	Turns FADE ON. (WHITE FADE)
20	[SHIFT 2] + [3]	DIS ON & Turns speed to 1/250sec.
21	[SHIFT 2] + [4]	Change the Visual Area for Super-DIS
22	[SHIFT 2] + [5]	Indoor White Balance data writing
23	[SHIFT 2] + [6]	Outdoor White Balance data writing
24	[SHIFT 2] + [7]	Focuses fully ”+”Condition.
25	[SHIFT 2] + [8]	Stops the focus.
26	[SHIFT 2] + [9]	Focuses fully ”−” Condition.
27	[SHIFT 2] + [B]	Indoor Phase and Gain data writing
28	[SHIFT 2] + [C]	Outdoor Phase and Gain data writing
29	[SHIFT 2] + [D]	Automatically calculates colour detection and writes the data to the EEPROM.
30	[RESET] + [0]	Writes the fixed data and all average data to the EEPROM for NV-R33A/B NV-R330EN
31	[RESET] + [1]	Writes the fixed data and all average data to the EEPROM for NV-R33E

Fig. C2-1

【Mode SW : "B" Side for NV-R55A/EE/R550EN】

No.	Buttons to be pushed [Push these together]	OPERATIONS
1	[SHIFT 1] + [0]	Fully opens the IRIS.
2	[SHIFT 1] + [1]	Fully closes the IRIS.
3	[SHIFT 1] + [2]	IRIS is turned to Manual Condition.
4	[SHIFT 1] + [3]	IRIS is turned to Original Condition. (AUTO)
5	[SHIFT 1] + [4]	WHITE set.
6	[SHIFT 1] + [5]	Zooms to "WIDE" position.
7	[SHIFT 1] + [6]	Stops the Zoom.
8	[SHIFT 1] + [7]	Zooms to "TELE" position.
9	[SHIFT 1] + [8]	Carrier Balance data writing
10	[SHIFT 1] + [9]	Minimizes AGC Gain.
11	[SHIFT 1] + [A]	Maximizes AGC Gain.
12	[SHIFT 1] + [B]	AGC is returned to Original condition.
13	[SHIFT 1] + [C]	Focuses to "MANUAL" Condition.
14	[SHIFT 1] + [D]	Focuses to "AUTO" Condition.
15	[SHIFT 1] + [E]	Zoom tracking data writing.
16	[SHIFT 1] + [F]	Zoom speed calculation.
17	[SHIFT 2] + [0]	Turns FADE ON. (BLACK FADE).
18	[SHIFT 2] + [1]	Turns FADE OFF.
19	[SHIFT 2] + [2]	Turns FADE ON. (WHITE FADE)
20	[SHIFT 2] + [3]	DIS ON & Turns speed to 1/250sec.
21	[SHIFT 2] + [4]	Change the Visual Area for Super-DIS
22	[SHIFT 2] + [5]	Indoor White Balance data writing
23	[SHIFT 2] + [6]	Outdoor White Balance data writing
24	[SHIFT 2] + [7]	Focuses fully "+"Condition.
25	[SHIFT 2] + [8]	Stops the focus.
26	[SHIFT 2] + [9]	Focuses fully "−" Condition.
27	[SHIFT 2] + [B]	Indoor Phase and Gain data writing
28	[SHIFT 2] + [C]	Outdoor Phase and Gain data writing
29	[SHIFT 2] + [D]	Automatically calculates colour detection and writes the data to the EEPROM.
30	[RESET] + [0]	Writes the fixed data and all average data to the EEPROM for NV-R55A/EE NV-R550EN

Fig. C2-2

2-3. ERROR INDICATION

If an error occurs while E.V.R. fixture is operating display one of the error messages listed in Fig. C3

Error No.	Contens of Error	Simple checking method
1	Set the wrong command number	
2	Set the wrong Address number	
3	VD signal from camera not coming	TP lead wire may be cut
4~6	Detect the error during communication	TP lead wire may be cut
7	Writing error in the EEPROM of camera	Command or address cure wrong
8	Communication error in the EEPROM of camera	Same as above

Fig. C3

3. COMPONENT REPLACEMENT AND ADJUSTMENT REQUIREMENT

When you replace following components, each adjustment are required as shown below.

Component	Adjustment Required	Page
MAIN C.B.A.	Writes all fixed & average data with Macro operation. Then check all adjustment if necessary.	Page 20
IC309(EEPROM)		
CCD UNIT	White Balance & Colour Phase/Gain Adjustment(Indoor/Outdoor) Colour reproduction(Macro operation) Focus & Zoom Encorder Adjustment	Page 10~12 Page 12 Page 6~7
LENS UNIT	Focus & Zoom Encorder Adjustment	Page 6~7
FOCUS ENCORDER C.B.A.		

Fig. C4

NOTE : When replacing the MAIN C.B.A. or IC309(EEPROM), Fixed & Average data must be written macro operation first, if not, Movie Camera will not work correctly when all adjustments are finished.

4. ASSISTANCE OF ADJUSTMENT REQUIREMENT

When replacing the MAIN C.B.A. or IC309(EEPROM), all adjustment items must be checked.
If necessary adjustment are required after Fixed & Average data are stored with macro operation..
Each adjustment is important. No-adjust or miss-adjustment will cause problems.
As reference, see following table.

Symptom	Description	Adjustment Required	Page
*. POOR FOCUSING	·Focus hunting or focus stops	·HALL AMP ADJ.	Page 8
	·Lens does not focus through full zoom range	·FOCUS & ZOOM ENCORDER ADJUSTMENT	Page 6
	·Lens does not focus while zooming.	·ZOOM SPEED ADJUSTMENT	Page 7
*. COLOUR LOSS	·The blooming appears on the picture	·V-SUB ADJUSTMENT	Page 8
*. PICTURE BLIGHTNESS (SHOOTING)	·Picture is too dark or too blight	·PWM ADJUSTMENT ·HALL AMP ADJUSTMENT ·AGC ADJUSTMENT ·ALC ADJUSTMENT ·PEDESTAL LEVEL ADJUSTMENT ·A/D INPUT LEVEL ADJUSTMENT	Page 8 Page 8 Page 8 Page 10 Page 8 Page 10
*. PICTURE POOR COLOUR (SHOOTING)	·Picture is Reddish or Bluish ·Red or Blue colour shift. (Seen on the monitor or with vectorscope.) ·If there is a picture but wrong colour or intensity level.	·PEDESTAL LEVEL ADJUSTMENT ·WHITE BALANCE ADJUSTMENT(IN/OUT DOOR) ·AUTO CALCULATION FOR COLOUR REPRODUCTION & DETECTION	Page 8 Page 10~12 Page 12
*. REC. /PLAYBACK PICTURE	·Weak picture colour Record. ·Beat seen in the picture.	·RECORDING CURRENT (CHROMINANCE) ADJUSTMENT	Page 15
	·S/N ration is low. ·Video signal overload (saturation)	·RECORDING CURRENT (LUMINANCE) ADJUSTMENT	Page 15

Fig. C5

1. Order of Adjustment

(1) SIGNAL INPUT or Test Chart	(2)TEST POINT	(3)CONDITION/PRESET With EVR or other	(4) HOW TO ADJUSTMENT EVR or VR	(5) SPEC	(6)HOW TO DATA WRITING EVR
Test chart & Signal Input for Adjustment	Connect the oscilloscope or equipment to test point	⇨ Set up the Camera Unit for Adjustment with Test Chart etcs.	⇨ Order of Adjustment How to control the signal levelat test point.		⇨ After Adjustment How to rewrite the data into EEPROM with EVR fixture.

2. Detail for Adjustment ／Example: AGC LEVEL ADJUSTMENT

(1) SIGNAL INPUT or Test Chart	(2)TEST POINT	(3)CONDITION/PRESET With EVR or other	(4)HOW TO ADJUSTMENT EVR or VR	(5) SPEC	(6)HOW TO DATA WRITING EVR
Aim the Camera at Gray-Scale Chart	Connect the oscilloscope to PP302-⑳ (VFK0734W-⑳)	①Push the following key for Set the IRIS Manual SHIFT 1+2 ② Shoot the Gray Scale Chart ③Push the following keys in order. CMD 1 8 ADR D E & D F push the INC or DEC unti Level at PP302- ⑤ is 320mV ±20mV.) (change the data for Address D E & D F until Level at PP302-⑤ is 320mV ±20mV.)	Push the following keys in order. CMD 1 8 ADR C E and then push INC or DEC unti Level at PP302 ⑳ is 320mV ±20mV.	Signal level at PP302- ⑳ is 320mV±20mV (To see Fig.C10)	Push the following keys in order for data writing. CMD 0 2 ADR A 8 SET Data does not change after adjustment.

NOTE: CMD 1 8 ⇨This symbol is key on the EVR-fixture.

5-1. ZOOM ENCODER & FOCUS ENCODER (FREE ADDRESS) ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	RAM	E² PROM		
48	B2(T) B1(W)	——	Hunting Chart (Distance from lens) 1.2m	D.V.M
12 02 12	——	A6(H):TELE A5(L):WIDE B0(H):Free		

SPEC	TP
To be calculated	PP302·⑧(VFK0734W·⑧) (Vref(+)) PP302·⑰(VFK0734W·⑰) (Vref(-))

<Initial Measurement 1>

1. Check the voltage at following points before replaceed lens unit.

Example
PP302-⑰ [Vref(-)] :1.152V
PP302-⑧ [Vref(+)] :3.520V

2. Make note the potential difference between PP302 ⑧ and PP302⑰.
Example:
(PP302 ⑧)V−(PP302· ⑰)V= Voltage(A)

<Initial Measurement 2>

3. For your reference, read out and make note the original data for each Encoder data from EEPROM.

ITEM	[CMD]	[ADDRESS]	DATA MEMO
ZOOM ENC TELE	CMD 1 4	ADR A 6	Example "3C"
ZOOM ENC WIDE	CMD 0 4	ADR A 5	Example "C8"
FOCUS ENC (FREE)	CMD 1 4	ADR B 0	Example "EF"

4. Turn off the Power SW , replace lens unit.
5. Turn on the Power SW .
6. Aim the Hunting Chart from a disatance as follows.

<Data Writing for Zoom.ENC Tracking data>

7. Push the following keys in order.

SHIFT 1+E (ZOOM ENC . Tracking)

<Preparation for TELE side>

8. Push the SHIFT 1+7 keys .... [Zoom to TELE]
9. Push the SHIFT 1+C keys .... [Manual Focus]
10. Push the SHIFT 2+9 keys .... [Focus (-) Side.]
(Wait few second until the picture focus does not change.)

11. Push the SHIFT 2+8 keys .... [Stop the Focus.]

12. Read out the preset data. (Push the following keys in order.)

CMD 4 9
ADR B 2
SET

13. <Adjustment for TELE side>

CMD 4 8
ADR B 2

Repeat the following procedure until in-focus condition is obtained at fully TELE side.

*Push I N C or D E C keys for 1~2 steps.
*Push SHIFT 1+5 (Zoom to"WIDE") and SHIFT 1+7 (Zoom to "TELE") keys.

Spec. :
Just in focus(Fully TELE side.)

Note: The focus does not change while focus voltage is being adjusted on the E.V.R so zoomed from TELE to WIDE and back to the TELE position.

*Just in focus...... [Go to step "14".]
*Out of focus ...... [Go to step "25".]

<Data Writing for TELE>

14. CMD 1 2
ADR A 6
SET

<Preparation for WIDE>

15. Make note the voltage at PP302· ⑧ Voltage(B)
Example 3.578 V.
16. Subtract that was noted at step "2 Voltage(A) from voltage at step "14 Voltage(B).
Example: 3.578 −2.368 =1.210V

<Adjustment for WIDE side>

17 CMD 4 8
ADR B 1
I N C or D E C

Spec. :
Voltage at PP302 ⑰ = 1.210V. (Voltage at Step. "16".)

<Data Writing for WIDE>

18. CMD 0 2
ADR A 5
SET   Data does not Change from step 17.

<Confirm the focus >

19. Turn the Power SW off/on .
20. Aim the Hunting Chart (dsiatance as follows.)

NV-R11: 1.2m

21. Push the SHIFT 1 + 7 keys .... [Zoom to TELE]
22. Push the SHIFT 1 + C keys .... [Manual Focus]
23. .Push the SHIFT 2 + 9 keys .... [Focus (-) Side.]
(Wait few second until the picture focus does not change.)

24. Push the SHIFT 2 + 8 keys .... [Stop the Focus.]

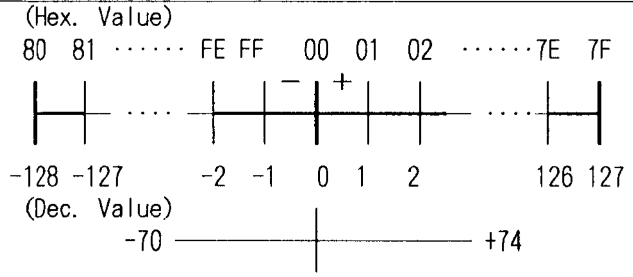
25. Check the back focus while zooming.
*. Push the SHIFT 2 + 5 keys..... [Zoom to WIDE]

*. If back focus is good, Focus Encorder adjustment is not required.
*. If back focus is not good, Focus Encorder adjustment is required. (Go to Step"26".)

<Adjustment of Focus Encorder data>

Note:
Transition of Focus encorder data is different from other data as shown below.

Example: Data"FF"+"2"steps=Data"01"
Data"01"−"3"steps=Data"FE"



Caution: Do not enter less than Data"BA"(-70).
Do not enter more than Data"4A"(+74).
(The Focus lens unit will be damaged.)

26. Confirm the focus condition on the TV Monitor.
*Focus improve when you pushed SHIFT 2 + 9 keys ,
Data for Focus Encoder decrease from original data as follow.

Example:
If original data is "EF" Focus Encoder decrease from "EF" a little bit.
Push the following keys in order.
*(CMD) , (1), (2)
*(ADR) , (B), (0)
*(DATA), (E), (D)
*(SET).
And then turn off/on the power sw, return to step"8".

Confirm the focus condition on the TV Monitor.
Focus improve when you pushed SHIFT 2 + 7 keys ,
Data for Focus Encoder increse from original data as follow.

Example:
If original data is "EF" Focus Encoder increase from "EF" a little bit.
Push the following keys in order.
*(CMD) , (1), (2)
*(ADR) , (B), (0)
*(DATA), (F), (1)
*(SET).
And then turn off/on the power sw, return to step"8".

5-2. ZOOM SPEED ADJUSTMENT

*. Push the SHIFT 1 + F keys..... [Zoom Spped Data Writing]

ITEM	(1)SIGNAL INPUT or Test Chart	(2)TEST POINT	(3) CONDITION/PRESET With EVR or other	(4)HOW TO ADJUSTMENT EVR or VR	(5) SPEC	(6) HOW TO DATA WRITING WITH EVR
5-3. PLL OSC FREQUENCY	————	TL202	① Connec the Frequency Countor to TL202.	Turn the C201	11.265625MHz +130Hz -100Hz	————
5-4 ① HALL AMP BIAS	————	PP302- ⑨ (VFK0734W-⑨)	① IRIS Close. Connect the Jumper-Wire between PP302-⑪ and GND ②Take Note the Voltage at PP302-⑱	CMD 1 8 ADR B 3 INC or DEC	Voltage at PP302-⑨= PP302- ⑱±10mV	CMD 0 2 ADR A 6 SET
				After Adjustment, please remove the Jumper-Wire.		
② HALL AMP-GAIN	————	PP301- ⑨ (VFK0734W-⑨)	① IRIS open. Connect the Jumper-Wire between PP301- ⑪ and PP302- ⑭. ②Take Note the Voltage at PP302-⑦.	CMD 1 8 ADR B 4 INC or DEC	Voltage at PP302-⑨= PP302- ⑦±10mV	CMD 1 2 ADR A 7 SET
				After Adjustment, please remove the Jumper-Wire.		
5-5 PWM		PP301- ⑨ (VFK0734W-⑨)	①IRIS Open SHIFT 1+0 ②Connect the D.V.M. at PP302- ⑦. ③ Make note voltage at PP302- ⑦. ④Connect the D.V.M. at PP302- ⑨.	CMD 1 8 ADR B 5 INC or DEC	Voltage at PP302-⑨= (PP302- ⑦−80mV) ±10mV	CMD 0 2 ADR A 7 SET
				After Adjustment push the following keys SHIFT 1+3 : Iris return to Auto		
5-6 V-SUB	U-Shape Chart	Monitor TV	①Zoom Full Tele SHIFT 1+7 ②IRIS Open SHIFT 1+0 ③Shoot the Camera U-Shape Chart with Halogen-Lamp (To see Fig.C6)	CMD 1 8 ADR B 0 INC or DEC	No-Blooming	CMD 1 2 ADR A 5 SET
				①After Adjustment push the following keys for check the No-Blming each area (to see Fig.C7) SHIFT 2+3 : DIS ON SHIFT 2+4 : Visual Area(DIS frame) is move ②After checking, please push the following keys SHIFT 1+3 : Iris return to Auto		
5-7 Y-CLIP LEVEL	————	Video-Output	① IRIS Close SHIFT 1+1 ② Conncet the Video-out to oscilloscope. ③White Fade SHIFT 2+2	CMD 1 8 ADR B 9 INC or DEC	V/S= 2.57 ±0.1 (Shown In Fig.C8)	CMD 0 2 ADR A 9 SET
				After Adjustment push the following keys SHIFT 1+3 : Iris return to Auto SHIFT 2+1 : Turn off the FADE		
5-8 PEDESTAL LEVEL	————	Video-Output	①AGC maximies SHIFT 1+A ② IRIS Close SHIFT 1+1 ③ Connect the oscilloscope to Video-Output	CMD 1 8 ADR B 6 INC or DEC	A = Less than 20mV±5mV (To see Fig.C9)	CMD 1 2 ADR A 8 SET
				After Adjustment push the following keys SHIFT 1+3 : Iris return to Auto SHIFT 1+B : AGC return to Auto		
5-9 AGC LEVEL	Gray-Scale Chart	PP302- ⑳ (VFK0734W-⑳)	① IRIS Manual SHIFT 1+2 ② Shoot the Gray Scale Chart ③ CMD 1 8 ADR D E & D F INC or DEC ④Level at PP302- ⑤ is 320mV ±20mV (To see Fig.C10)	CMD 1 8 ADR C E INC or DEC	Signal level at PP302- ⑳ is 320mV±20mVp-p (To see Fig.C11)	CMD 0 2 ADR A 8 SET
				After Adjustment push the following keys SHIFT 1+3 Iris return to Auto		

Fig. C6 (U-SHAPE CHART)

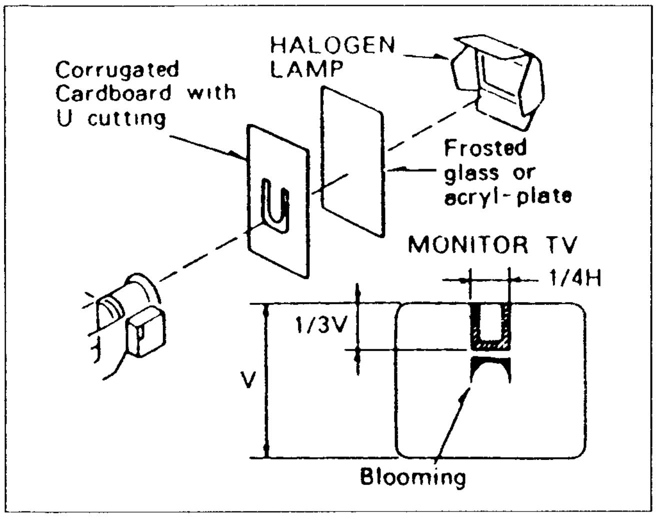

HALOGEN LAMP
Corrugated Cardboard with U cutting
Frosted glass or acryl-plate
MONITOR TV
1/4H
1/3V
V
Blooming

Fig. C7 (V-SUB ADJUSTMENT CHECK

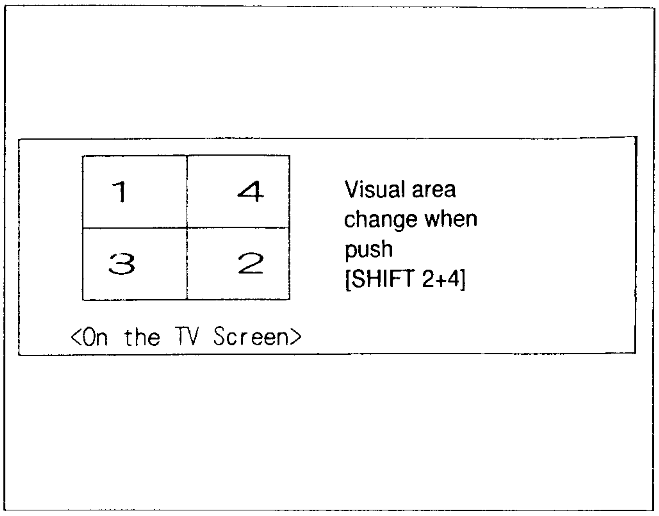
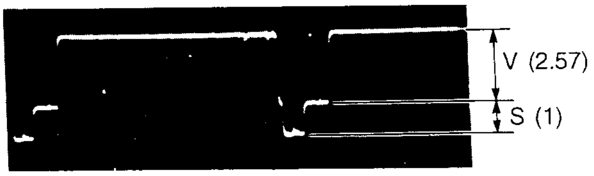
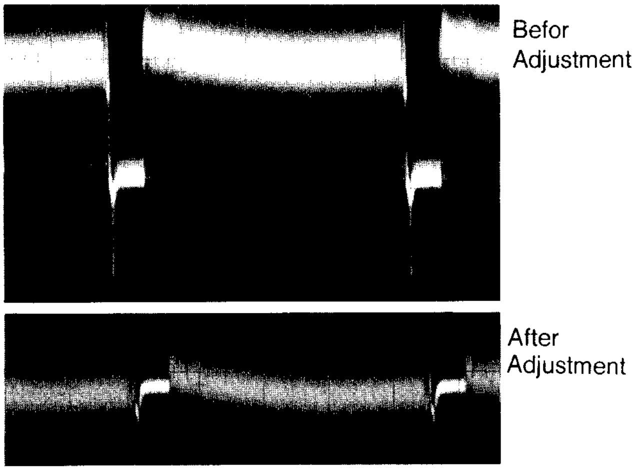

1
4
3
2
Visual area change when push [SHIFT 2+4]
<On the TV Screen>

Fig. C8 (Y-CLIP LEVEL)



V/S =2.57±0.1

Fig. C9 (PEDESTAL LEVEL)



A = Less than 20mV ±5mVp-p

Fig. C10 (AGC PRESET)

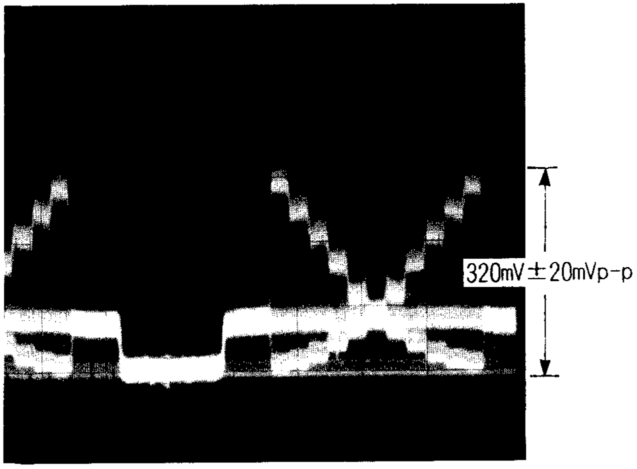
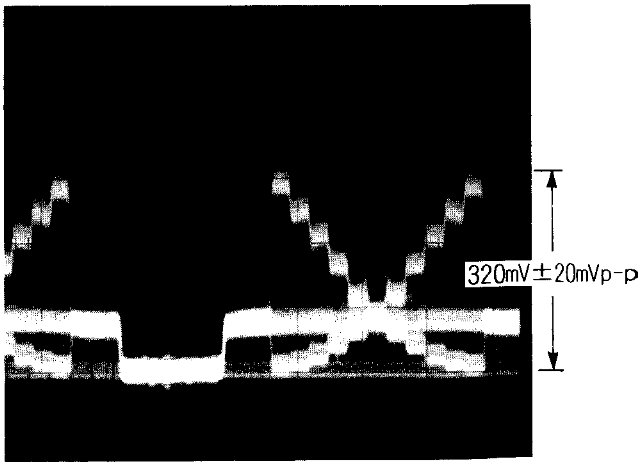


Fig. C11 (AGC LEVEL)



ITEM	(1)SIGNAL INPUT or Test Chart	(2)TEST POINT	(3) CONDITION/PRESET With EVR or other	(4)HOW TO ADJUSTMENT EVR or VR	(5) SPEC	(6) HOW TO DATA WRITING WITH EVR
5-10 A/D INPUT LEVEL	Gray-Scale Chart	PP302- ⑥ (VFK0734W-⑥)	① IRIS Manual SHIFT 1+2 ② Shoot the Gray Scale Chart ③ CMD 1 8 ADR D E & D F INC or DEC	CMD 1 8 ADR 5 B INC or DEC	Signal level at PP302- ⑥ becomes 1. 16V±40mVp-p. (To see Fig. C13)	CMD 1 2 ADR A 9 SET
			④Level at PP302- ⑤ is 320mV ±20mV (To see Fig. C12)	After Adjustment push the following keys SHIFT 1+3 Iris return to Auto		
5-11 ALC	Gray-Scale Chart	PP302- ⑥ (VFK0734W-⑥)	① IRIS Auto SHIFT 1+3 ② Connect the oscilloscope to PP302- ⑥.	CMD 1 8 ADR D 4 INC or DEC	Signal level at B401-⑥ is PP302- ⑥ becomes 1. 16V±40mVp-p. (To see Fig. C14)	CMD 1 2 ADR A 4 SET
5-12 CARRIER BALANCE	————	Video Out	① IRIS Close SHIFT 1+1 ② Connect the Video out to Vectorscope.	R-Y Carrier CMD 1 8 ADR B A INC or DEC R-Y Carrier CMD 1 8 ADR B B INC or DEC	Centre of Vectorscope (To see Fig. C15)	Carrier Balance Data Writing SHIFT 1+8
5-13 WHITE BALANCE (INDOOR)	WHITE CHART	Video Out Signal on Vectorscope	① Shoot the White Chart ② Connect the Video-out to Vectorscope. ③ White Set with White Chart SHIFT 1+4 (Confirm the vector comes to centre)	————	Centre of Vectorscope (To see Fig. C16)	Indoor White Balance Data Writing SHIFT 2+5
5-14 COLOUR PHASE & GAIN (INDOOR)	Colour Bar-Chart	Video-Out on Vectorscope	Be sure to carry out the Indoor White-Balance Adjustment befor doing this adjustment. ① Shoot the Colour-Bar Chart. ② Connect the Video-out to Vectorscope.	R-Y Gain CMD 1 8 ADR 5 5 INC or DEC R-Y Phase CMD 1 8 ADR 5 7 INC or DEC B-Y Gain CMD 1 8 ADR 5 4 INC or DEC B-Y Phase CMD 1 8 ADR 5 6 INC or DEC	RED-Vector GAIN :180±10% PHASE:104±3° (RED/BURST) YELLOW-Vector GAIN :130±10% PHASE:168±3° (YELLOW/BURST) Reference for RED & YELLOW Vectors are Burst Siganl. (To see Fig. C17)	When Vector Come to Spec Please Push following Keys SHIFT 2+B
5-15 WHITE BALANCE (OUTDOOR)	WHITE CHART with VFK0713 & VFK0716	Video Out Signal on Vectorscope	① Cover the Lens with Colour Temperature Conversion Filter, VFK0713 & VFK0716 ② White Set with White Chart SHIFT 1+4 (Confirm the vector comes to centre)	————	Centre of Vectorscope (To see Fig. C18)	Outdoor White Balance Data Writing SHIFT 2+6

Fig. C12 (A/D INPUT PRESET)

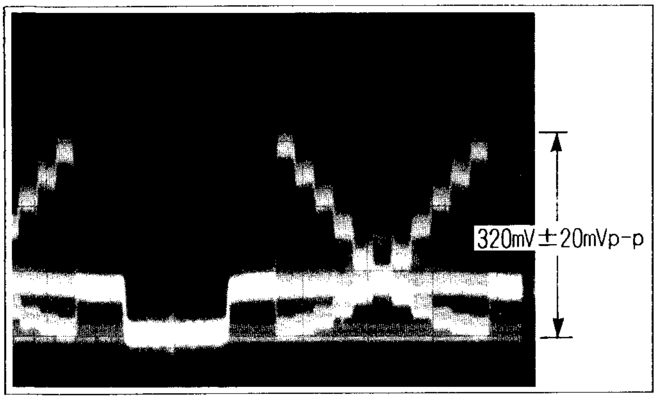


Fig. C13 (A/D INPUT LEVEL)

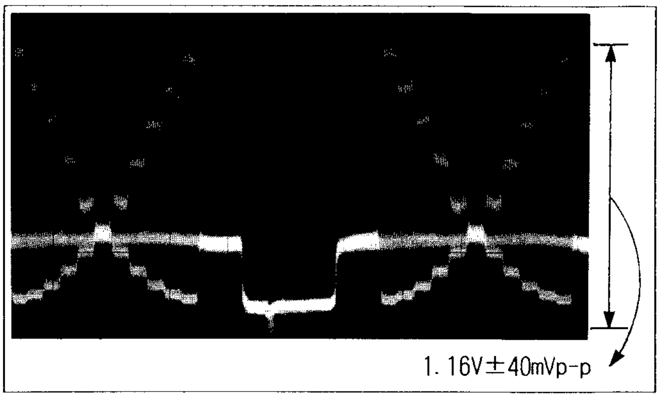


Fig. C14 (ALC LEVEL)

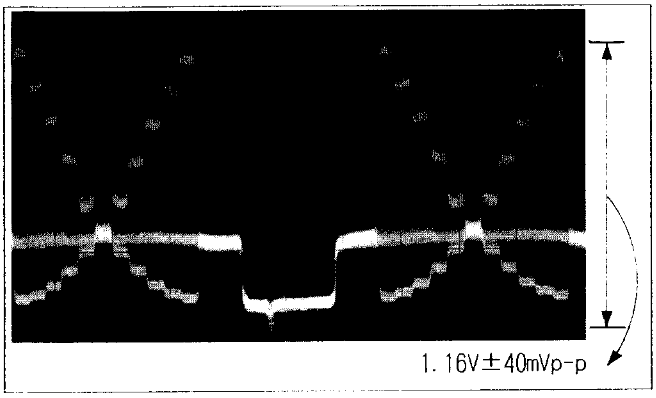


Fig. C15 (CARRIER BALANCE)

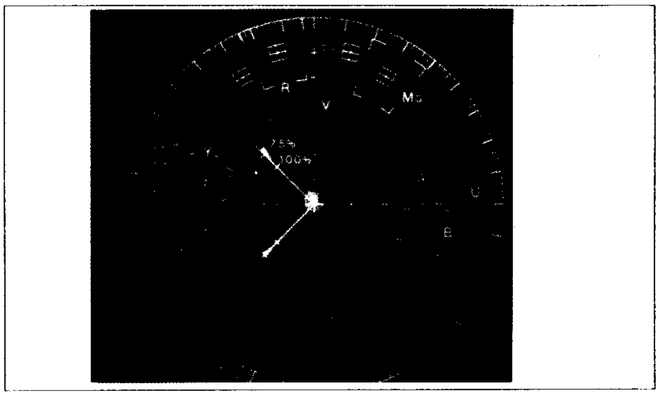


Fig. C16 (WHITE BALANCE/INDOOR)

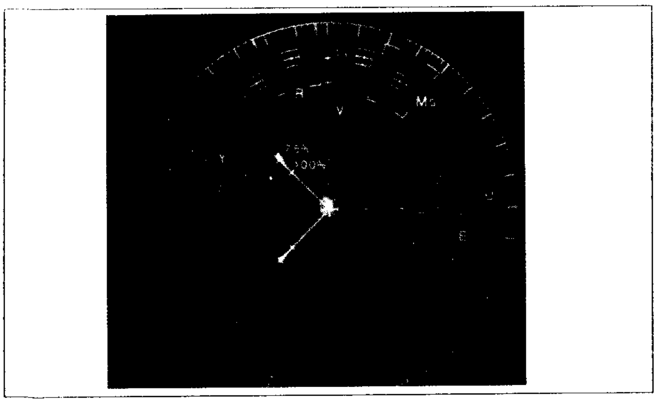


Fig. C17 (COLOR PHASE & GAIN)

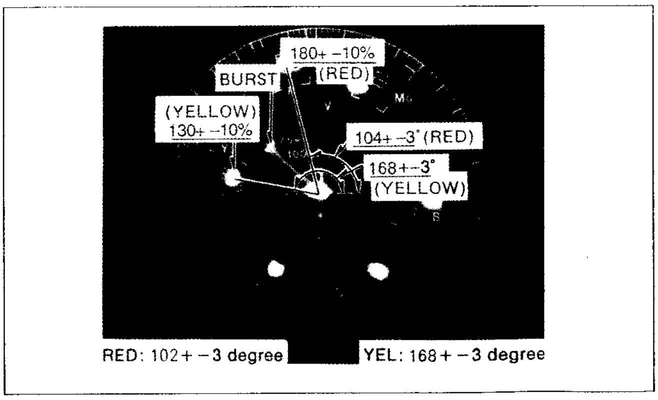
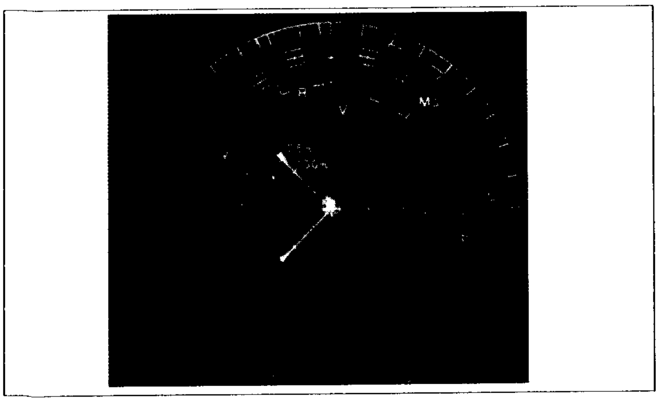


Fig. C18 (WHITE BALANCE/OUTDOOR)



ITEM	(1)SIGNAL INPUT or Test Chart	(2)TEST POINT	(3) CONDITION/PRESET With EVR or other	(4)HOW TO ADJUSTMENT EVR or VR	(5) SPEC	(6) HOW TO DATA WRITING WITH EVR
5-16 COLOUR PHASE & GAIN (OUTDOOR)	Colour Bar-Chart with VFK0713 & VFK0716	Video-Out on Vectorscope	Be sure to carry out the Outdoor White-Balance Adjustment befor doing this adjustment. ① Shoot the Colour-Bar Chart. ② Cover the Lens with Colour Temperature Conversion Filter, VFK0713 & VFK0716	R-Y Gain CMD 1 8 ADR 5 5 INC or DEC R-Y Phase CMD 1 8 ADR 5 7 INC or DEC B-Y Gain CMD 1 8 ADR 5 4 INC or DEC B-Y Phase CMD 1 8 ADR 5 6 INC or DEC	RED-Vector GAIN :180±10% PHASE:104±3° (RED/BURST) YELLOW-Vector GAIN :130±10% PHASE:168±3° (YELLOW/BURST) Reference for RED & YELLOW Vectors are Burst Siganl. (To see Fig.C19)	When Vector Come to Spec Please Push following Keys SHIFT 2+C When push the above keys, adjustment datas are transmited to EEPROM from RAM.
5-17 DATA WRITING FOR COLOUR REPRODUCTION & WHITE BALANCE	————	————	① Confirm that Mode SW Position of EVR. A side : NV-R33/330 B side : NV-R55/R550	————	Shown in Fig.C21 & C22.	Please Push following Keys SHIFT 2+D

Note 1:When the following command carry-out, result of all formulasin Fig.C21/C22 are into EEPROM automatically.
SHIFT 1+D

Note 2:If you want to calculate each formulas , please refere to following step.

How to calculate and enter the data manually.

(For example)
ITEM : R-Y Gain 2800°
FORMULA : 0.012 ×ADR"05" +1.0 ×ADR"01"

1).How to read out the data from EEPROM as follows.
Push the following keys in order.

CMD 0 4
ADR 0 5
SET

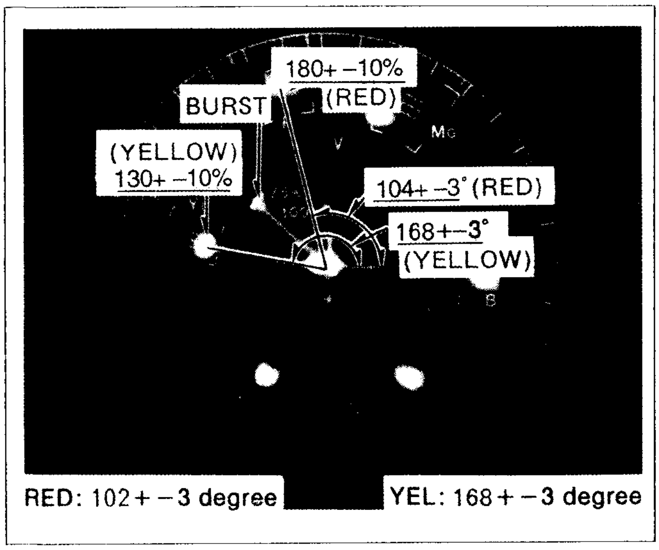
When the push SET key,DATA LED indicated the data for Address 0 5
For Example, if indicate data is "2A". it is data for Address 0 5 (This is hexadecimal number.)

Also read out the data from Address 0 1
For example, Data for Address 0 1 = "2C".
Calculation Formula become as follows.

R-Y Gain 2800° = 0.012 ×"2A"+1.0 ×"2C"
⇩
2).Convert the hexadecimal data into decimal number using conversion table(See Fig.T3)
R-Y Gain 2800° = 0.012 × 42 +1.0 × 44
= 44.504 ≒ 45
3).Convert the resul "45" to hexadecimal using conversion table.(Fig.C20)
"45" decimal is "2D" in hexadecimal.
Write the "2D"into EEPROM address "06".
Please push the following keys in order

CMD 0 2
ADR 0 6
DATA 2 D
SET

Fig. C19 (COLOR PHASE & GAIN)


180+ -10%
(RED)
BURST
(YELLOW)
130+ -10%
104+ -3° (RED)
168+-3°
(YELLOW)
RED: 102+ -3 degree
YEL: 168+ -3 degree

(Hexadecimal—Decimal Conversion Table)

For some of adjustment items, calculation of hexadecimaldata(indicated on LED of EVR fixture) is needed to obtain the adjustment data. In these cases, convert the hexadecimal value to decimal value before calculation and after calculation is finished reconvert the result to hexadecimal to obtain the adjustment data write the new hexadecimal adjustment data into EEPROM. A hexadecimal-decimal conversion table is shown in Fig. C20.

②

Hexadecimal lower digit / Hexadecimal upper digic	0	1	2	3	4	5	6	7	8	9	A	b	C	d	E	F
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
① 2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
b	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
d	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

For example: If indication of EVR is "6D" (as upper digit is "6" and lower digit is "D"), a decimal value of "109" is obtained from the intersection of ① and ② in the above table.

Fig. C20

Calculation for Colour Reproduction

NBR	ITEM	EEPROM ADDRESS	CMD	FORMULA	RESULT OF CALCULATION
1	R-Y Gain Control 2800	35	READ 04 WRITE 02	ADR"34(L)"	
2	R-Y Gain Control MIX	1C	READ 04 WRITE 02	ADR"34(L)"+1.000×(ADR"31(L)"−ADR"34(L)")	
3	R-Y Gain Control 3600	33	READ 04 WRITE 02	ADR"34(L)"+1.000×(ADR"31(L)"−ADR"34(L)")	
4	R-Y Gain Control 4500	32	READ 04 WRITE 02	ADR"34(L)"+0.701×(ADR"31(L)"−ADR"34(L)")	
5	R-Y Gain Control 6000	30	READ 04 WRITE 02	ADR"34(L)"+1.000×(ADR"31(L)"−ADR"34(L)")	
6	R-Y Matrix 2800	25	READ 04 WRITE 02	ADR"24(L)" + 0.000×(ADR"21(L)"−ADR"24(L)")	
7	R-Y Matrix MIX	1D	READ 04 WRITE 02	ADR"24(L)" + 1.000×(ADR"21(L)"−ADR"24(L)")	
8	R-Y Matrix 3600	23	READ 04 WRITE 02	ADR"24(L)" + 0.000×(ADR"21(L)"−ADR"24(L)")	
9	R-Y Matrix 4500	22	READ 04 WRITE 02	ADR"24(L)" + 0.000×(ADR"21(L)"−ADR"24(L)")	
10	R-Y Matrix 6000	20	READ 04 WRITE 02	ADR"24(L)" + 1.000×(ADR"21(L)"−ADR"24(L)")	
11	R-Y White Balance 2800	3B	READ 04 WRITE 02	ADR"3A(L)" − 0.000×(ADR"37(L)"−ADR"3A(L)")	
12	R-Y White Balance 3600	39	READ 04 WRITE 02	ADR"3A(L)" + 0.872×(ADR"37(L)"−ADR"3A(L)")	
13	R-Y White Balance 4500	38	READ 04 WRITE 02	ADR"3A(L)" + 1.038×(ADR"37(L)"−ADR"3A(L)")	
14	R-Y White Balance 4900	3C	READ 04 WRITE 02	ADR"3A(L)" + 1.000×(ADR"37(L)"−ADR"3A(L)")	
15	R-Y White Balance 6000	36	READ 04 WRITE 02	ADR"3A(L)" + 1.233×(ADR"37(L)"−ADR"3A(L)")	
16	R-Y White Balance Low limit	26	READ 04 WRITE 02	ADR"3A(L)" + 1.233×(ADR"37(L)"−ADR"3A(L)")	
17	R-Y White Balance High limit	27	READ 04 WRITE 02	ADR"3A(L)" + 1.000×(ADR"37(L)"−ADR"3A(L)")	
18	Raxisth High limit	28	READ 04 WRITE 02	ADR"3A(L)" + 0.759×(ADR"37(L)"−ADR"3A(L)")	
19	B-Y Gain Control 2800	35	READ 14 WRITE 12	ADR"34(H)" + 0.000×(ADR"31(H)"−ADR"34(H)")	
20	B-Y Gain Control MIX	1C	READ 14 WRITE 12	ADR"34(H)" + 1.000×(ADR"31(H)"−ADR"34(H)")	
21	B-Y Gain Control 3600	33	READ 14 WRITE 12	ADR"34(H)" + 0.449×(ADR"31(H)"−ADR"34(H)")	
22	B-Y Gain Control 4500	32	READ 14 WRITE 12	ADR"34(H)" + 1.000×(ADR"31(H)"−ADR"34(H)")	
23	B-Y Gain Control 6000	30	READ 14 WRITE 12	ADR"34(H)" + 0.000×(ADR"31(H")−ADR"34(H)")	
24	B-Y Matrix 2800	25	READ 14 WRITE 12	ADR"24(H)" + 0.000×(ADR"21(H)"−ADR"24(H)")	
25	B-Y Matrix MIX	1D	READ 14 WRITE 12	ADR"24(H)" + 1.000×(ADR"21(H)"−ADR"24(H)")	
26	B-Y Matrix 3600	23	READ 14 WRITE 12	ADR"24(H)" + 0.768×(ADR"21(H)"−ADR"24(H)")	
27	B-Y Matrix 4500	22	READ 14 WRITE 12	ADR"24(H)" + 0.548×(ADR"21(H)"−ADR"24(H)")	
28	B-Y Matrix 6000	20	READ 14 WRITE 12	ADR"24(H)" + 1.000×(ADR"21(H)"−ADR"24(H)")	
29	B-Y White Balance 2800	3B	READ 14 WRITE 12	ADR"3A(H)" - 0.000×(ADR"37(H)"−ADR"3A(H)")	
30	B-Y White Balance 3600	39	READ 14 WRITE 12	ADR"3A(H)" + 0.420×(ADR"37(H)"−ADR"3A(H)")	
31	B-Y White Balance 4500	38	READ 14 WRITE 12	ADR"3A(H)" + 0.660×(ADR"37(H)"−ADR"3A(H)")	
32	B-Y White Balance 4900	3C	READ 14 WRITE 12	ADR"3A(H)" + 1.000×(ADR"37(H)"-ADR"3A(H)")	
33	B-Y White Balance 6000	36	READ 14 WRITE 12	ADR"3A(H)" + 1.699×(ADR"37(H)"-ADR"3A(H)")	
34	B-Y White Balance Low limit	26	READ 14 WRITE 12	ADR"3A(H)" + 1.699×(ADR"37(H)"-ADR"3A(H)")	
35	B-Y White Balance High limit	27	READ 14 WRITE 12	ADR"3A(H)" + 1.000×(ADR"37(H)"-ADR"3A(H)")	
36	Baxisth	28	READ 14 WRITE 12	Fixed DATA	

Fig. C21

Calculation for Auto White Balance

NBR	ITEM	EEPROM ADDRESS	CMD	FORMULA	RESULT OF CALCULATION
1	B-High limit 2800	1B	READ 14 WRITE 12	ADR"3A(H)" -1.000×(ADR"37(H)"-ADR"3A(H)")	
2	B-High limit 3100	1A	READ 14 WRITE 12	ADR"3A(H)" -0.839×(ADR"37(H)"-ADR"3A(H)")	
3	B-High limit 3600	19	READ 14 WRITE 12	ADR"3A(H)" -0.288×(ADR"37(H)"-ADR"3A(H)")	
4	B-High limit 4500	18	READ 14 WRITE 12	ADR"3A(H)" +0.571×(ADR"37(H)"-ADR"31(H)")	
5	B-High limit 5100	17	READ 14 WRITE 12	ADR"3A(H)" +0.765×(ADR"37(H)"-ADR"31(H)")	
6	B-High limit 6000	16	READ 14 WRITE 12	ADR"3A(H)" +2.083×(ADR"37(H)"-ADR"31(H)")	
7	B-Low limit 2800	15	READ 14 WRITE 12	ADR"3A(H)" +0.082×(ADR"37(H)"-ADR"3A(H)")	
8	B-Low limit 3100	14	READ 14 WRITE 12	ADR"3A(H)" +0.339×(ADR"37(H)"-ADR"3A(H)")	
9	B-Low limit 3600	13	READ 14 WRITE 12	ADR"3A(H)" +0.558×(ADR"37(H)"-ADR"3A(H)")	
10	B-Low limit 4500	12	READ 14 WRITE 12	ADR"3A(H)" +0.765×(ADR"37(H)"-ADR"3A(H)")	
11	B-Low limit 5100	11	READ 14 WRITE 12	ADR"3A(H)" +2.083×(ADR"37(H)"-ADR"3A(H)")	
12	B-Low limit 6000	10	READ 14 WRITE 12	ADR"3A(H)" +2.102×(ADR"37(H)"-ADR"3A(H)")	
13	R-High limit 2800	1B	READ 04 WRITE 02	ADR"3A(L)" -3.244×(ADR"37(L)"-ADR"3A(L)")	
14	R-High limit 3000	1A	READ 04 WRITE 02	ADR"3A(L)" -1.401×(ADR"37(L)"-ADR"3A(L)")	
15	R-High limit 3600	19	READ 04 WRITE 02	ADR"3A(L)" +0.487×(ADR"37(L)"-ADR"3A(L)")	
16	R-High limit 4500	18	READ 04 WRITE 02	ADR"3A(L)" +0.759×(ADR"37(L)"-ADR"3A(L)")	
17	R-High limit 5100	17	READ 04 WRITE 02	ADR"3A(L)" +0.759×(ADR"37(L)"-ADR"3A(L)")	
18	R-High limit 6000	16	READ 04 WRITE 02	ADR"3A(L)" +0.759×(ADR"37(L)"-ADR"3A(L)")	
19	R-Low limit 2800	15	READ 04 WRITE 02	ADR"3A(L)" -1.401×(ADR"37(L)"-ADR"3A(L)")	
20	R-Low limit 3100	14	READ 04 WRITE 02	ADR"3A(L)" +0.487×(ADR"37(L)"-ADR"3A(L)")	
21	R-Low limit 3600	13	READ 04 WRITE 02	ADR"3A(L)" +0.949×(ADR"37(L)"-ADR"3A(L)")	
22	R-Low limit 4500	12	READ 04 WRITE 02	ADR"3A(L)" +1.142×(ADR"37(L)"-ADR"3A(L)")	
23	R-Low limit 5100	11	READ 04 WRITE 02	ADR"3A(L)" +1.650×(ADR"37(L)"-ADR"3A(L)")	
24	R-Low limit 6000	10	READ 04 WRITE 02	ADR"3A(L)" +1.650×(ADR"37(L)"-ADR"3A(L)")	

Fig. C22

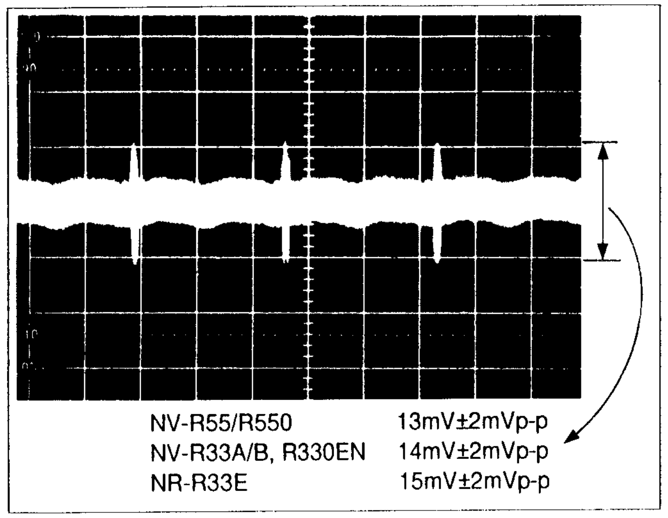
6. ADJUSTMENT FOR VTR-SECTION

ITEM	(1)SIGNAL INPUT or Test Chart	(2)TEST POINT	(3) CONDITION/PRESET With EVR or other	(4)HOW TO ADJUSTMENT EVR or VR	(5) SPEC	(6) HOW TO DATA WRITING WITH EVR
6-1 CHORMINANCE RECORDING CURRENT	————	TL5001 TL5002	① IRIS Close SHIFT 1 + 1 ②Connect oscilloscope to TL5001(GND), TL5002 (HOT). ③Connect the jumper-wire between TL3005 & GND. or push the following keys for elminate the Luminance recording current. CMD 1 8 ADR B D DATA 0 0 SET	CMD 1 8 ADR B C INC or DEC	Adjust the Signal level at TL5001. Spec as shown below. NV-R55/R550 : 13mV±2mVp-p NV-R33A/B, R330EN : 14mV±2mVp-p NV-R33E : 15mV±2mVp-p (To see Fig. C23)	CMD 1 2 ADR A B SET
				After adjustment, push the following keys. SHIFT 1 + 3 Iris return to Auto. Also, remove the jumper-wire.		
6-2 LUMINANCE RECORDING CURRENT	————	TL5001 TL5002	① IRIS Close SHIFT 1 + 1 ②Connect oscilloscope to TL5001(GND), TL5002 (HOT).	CMD 1 8 ADR B D INC or DEC	Adjust the Signal level at TL5001. Spec as shown below. NV-R55/R550 : 100mV ±5mVp-p NV-R33A/B, R330EN : 92mV ±4mVp-p NV-R33E : 110mV ±5mVp-p	CMD 0 2 ADR A B SET
				After adjustment, push the following keys. SHIFT 1 + 3 Iris return to Auto.		
6-3 PG SHIFTER	Reference Tape	Video-Out PP6004-6.	①Disconnect the EVR-Fixture ②Place the unit in OSD Line out Mode Push the followig keys Simultaneouly for at least 2 sec. Key name : location ①DATE/TIME "SET" : Top panel ②RESET : Top panel ③DATE/TIME : Side panel	Push the following keys until PG point becomes Spec. Spec :Video-Out = 6.5 ±0.5H Push the RESET or TAPE keys on Top Panel. RESET key for data decrease. TAPE key fordata increase. When PG point become spec, Take note PG Value. (To see Fig. C25)		
			③Place the unit in Service Mode. Push the followig keys Simultaneouly for at least 2 sec. Key name : location ①DATE/TIME "SHIFT" : Top panel ②RESET : Top panel ③DATE/TIME : Side panel	And then connect the EVR-Fixture. After that data for PG-value write into the EEPROM as follows. Push the following keys in order.		
			④Place the unit in Service Mode 4. Push the following key 3 times. DATE/TIME on Side panel	How to Data-Writing CMD 1 2 ADR A E DATA * * SET	Note: When PG point become spec, Take note PG Value. DATA * *	

7. Adjustment for Audio Section (Only for NV-R33/R330 Series)

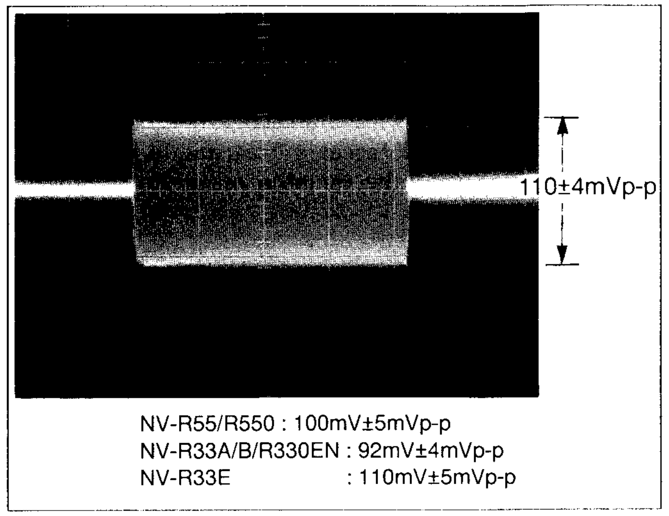
7-1 FM AUDIO RECORDING CURRENT	————	TL5003(HOT) TL5004(GND)	① Disconnect the P4001. ②Connect oscilloscope to TL5003(HOT), TL5004(GND).	CMD 1 8 ADR C 0 INC or DEC	Signal level at TL5003 becomes 210±40mVp-p. (To see Fig. C27)	CMD 1 2 ADR A C SET

Fig. C23(CHROMA REC CURRENT)



NV-R55/R550	13mV±2mVp-p
NV-R33A/B, R330EN	14mV±2mVp-p
NR-R33E	15mV±2mVp-p

Fig. C24(LUMINANCE REC CURRENT)



NV-R55/R550 : 100mV±5mVp-p
NV-R33A/B/R330EN : 92mV±4mVp-p
NV-R33E : 110mV±5mVp-p

Fig. C25(PRESET FOR PG SHIFTER)

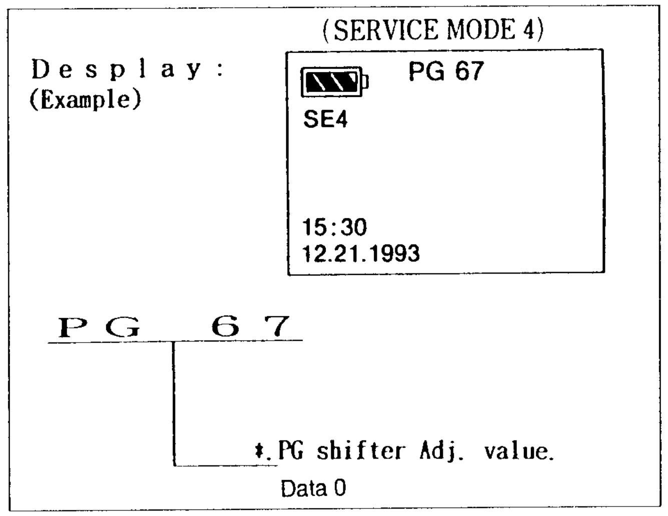


Fig. C26 (PG SHIFTER)

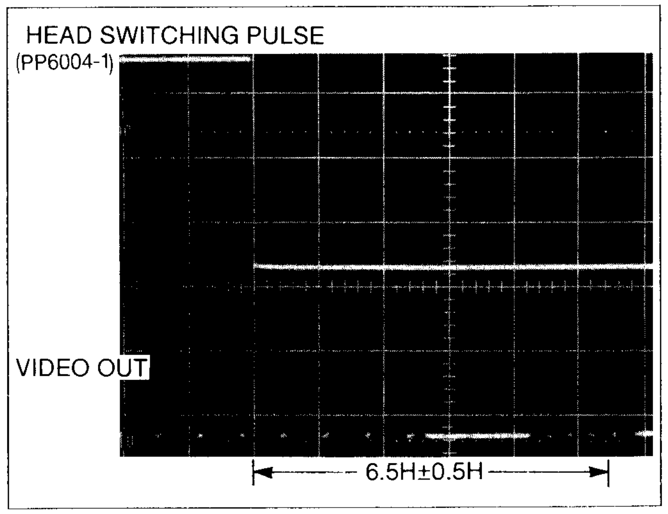
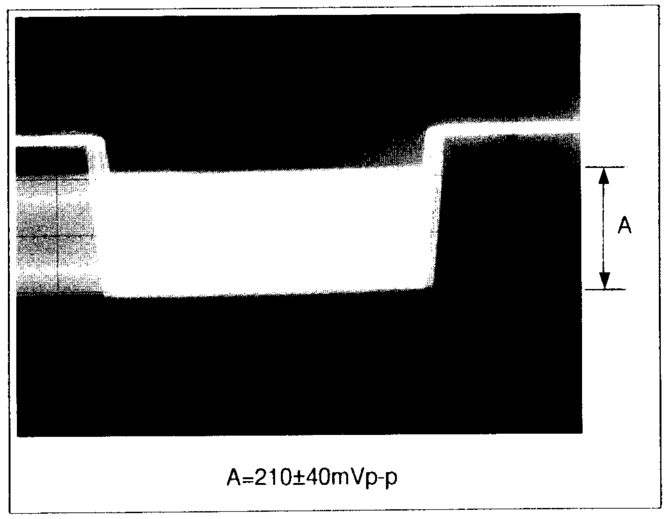


Fig. C27(FM AUDIO RECORDING CURRENT)



A=210±40mVp-p

8. ADDITIONAL USES FOR THE E. V. R

8-1. General description.

Camera Process section uses a memory IC called a E^2 P. R. O. M(Electric Eraseable Programable Read Only Memory) that replace the variable resistor in conventional camera process.

In conventional camera process, each adjustment point was adjusted by turning variable resistor.

In the some adjustment voltage is record in the E^2 PROM as 8 bit digital data.

The E^2 PROM supplies the record adjustment voltage to the adjustment point as shown Fig. C28.

The data in the E^2 PROM can be easily changed electrically.
The E. V. R has been designed to change the 8-bit digital data of E^2 PROM in system control circuit.

The E. V. R can communicate directly with the RAM of the microprocessor to change each control voltage.

In normal operation the E^2 PROM would send the voltage data to RAM where the digital data is used to change the adjustment values in the circuit.

Using the E. V. R you can change the data stored in E^2 PROM.
And the E. V. R can also send the data to RAM directly to confirm the adjustment.

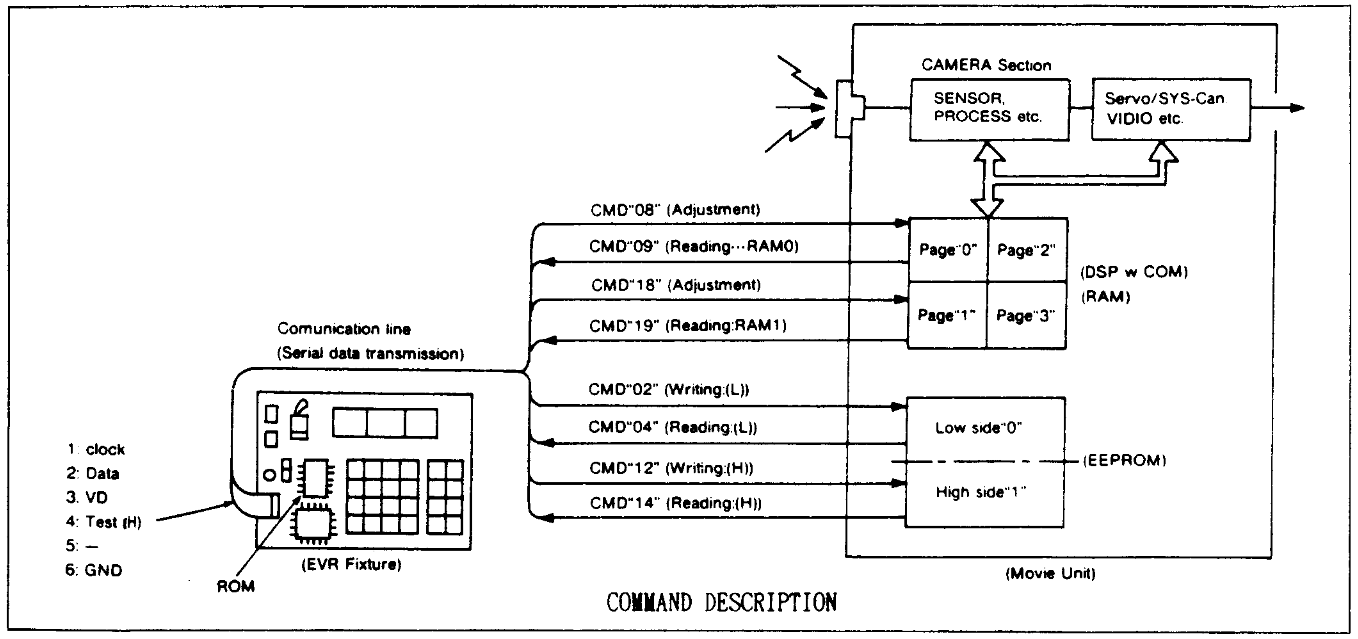


Fig. C28

8-2. E^2 P. R. O. M ADDRESS & DATA MAP

The E^2 PROM Address & Data Map are shown in Page20~23.
Data for NV-R33 series and NV-R55 series are different.

So, please check the EVR mode SW befor enter the Fied data and averaged data.

(Automatic Writig)

1. Confirm that ROM of EVR has been replaced with the new one(Part No. : VFK0701ROM29)

2. Confirm that Mode Select switch position of EVR according to Model No. as follows.

Model No & EVR mode SW	NV-R33A/B/ NV-R330EN (A-SIDE)	NV-R33E (A-SIDE)	NV-R55A/EE NV-R550EN (B-SIDE)
Command for Fix & average data	RESET + 0	RESET + 1	RESET + 0

3. Depend on the models, Push commands(0, or 1) right away after pushing the RESET key.

In case of EVR Mode-Sw is "A" side.

RESET + 0 ⇨ NV-R33A/B/NV-R330EN
RESTE + 1 ⇨ NV-R33E

In case of EVR Mode-Sw is "B" side.

RESET + 0 ⇨ NV-R55A/EE/NV-R550EN

4. When the pushing the above commands, Fixed data averaged data write in to the E^2 PROM.

Purpose:
When replacing the main C. B. A and IC309, Fixed & Average data must be written.

Symptom of Mis-entered data:
Picture will not appear or will not work correctly.

※ :FIXED DATA
◎ :AUTO CALICULATION DATA
▼ :ADJUSTMENT DATA
● :NOT USED

EEPROM MAP(1) for NV-R33/R330

ADR	H/L	DATA			ITEM
00	H	FF	※		
	L	00	※		
01	H	00	※		ALC flag
	L	00	※		
02	H	00	※		
	L	00	※		HSS LIMIT
03	H	07	※		
	L	05	※		
04	H	0E	※		AGC CTL
	L	0A	※		
05	H	15	※		
	L	67	※		
06	H	16	※		DIS CTL FOR AE
	L	67	※		DIS CTL FOR AE
07	H	82	※		
	L	A1	※		
08	H	10	※		H.S.S CTL
	L	08	※		
09	H	20	※		
	L	CC	※		
0A	H	7B	※		HSS CTL/DIS
	L	08	※		AGC CTL/DIS
0B	H	67	※		WARNIG/DIS
	L	67	※		WARNIG/DIS
0C	H	F8	※		ALC SH
	L	ED	※		ALC SH
0D	H	F8	※		ALC SH
	L	D9	※		ALC SH
0E	H	10	※		AGC CTL/L.LIGHT
	L	0E	※		AGC CTL/NORMAL
0F	H	16	※		M.IRIS CTL
	L	00	※		M.IRIS CTL
10	H	1D	◎		B L-LIMIT6000
	L	30	◎		R L-LIMIT6000
11	H	1F	◎		B L-LIMIT5100
	L	30	◎		R L-LIMIT5100
12	H	67	◎		B L-LIMIT4500
	L	43	◎		R L-LIMIT4500
13	H	71	◎		B L-LIMIT3600
	L	4A	◎		R L-LIMIT3600
14	H	7D	◎		B L-LIMIT3100
	L	5C	◎		R L-LIMIT3100
15	H	8B	◎	AWB	B L-LIMIT2800
	L	A1	◎		R L-LIMIT2800
16	H	1F	◎		B H-LIMIT6000
	L	51	◎		R H-LIMIT6000
17	H	66	◎		B H-LIMIT5100
	L	51	◎		R H-LIMIT5100
18	H	70	◎		B H-LIMIT4500
	L	51	◎		R H-LIMIT4500
19	H	9F	◎		B H-LIMIT3600
	L	5B	◎		R H-LIMIT3600
1A	H	BC	◎		B H-LIMIT3100
	L	A1	◎		R H-LIMIT3100
1B	H	C5	◎		B H-LIMIT2800
	L	E5	◎		R H-LIMIT2800
1C	H	36	◎		B-Y G4900
	L	3F	◎		R-Y G4900
1D	H	6A	◎		B-Y MAT 4900
	L	69	◎		R-Y MAT 4900
1E	H	B3	※		WB DETECT
	L	04	※		WB DETECT
1F	H	08	※		WB SHIFT SPEED
	L	09	※		WB SHIFT SPEED
20	H	6A	◎		B-Y MAT 6000
	L	69	◎		R-Y MAT 6000
21	H	6A	▼		B-Y MAT 5100
	L	69	▼		R-Y MAT 5100
22	H	6E	◎		B-Y MAT 4500
	L	47	◎		R-Y MAT 4500
23	H	6C	◎		B-Y MAT 3600
	L	47	◎	AWB	R-Y MAT 3600
24	H	72	▼		B-Y MAT 5100
	L	47	▼		R-Y MAT 5100
25	H	72	◎		B-Y MAT 2800
	L	47	◎		R-Y MAT 2800
26	H	33	◎		Bwb Llimit
	L	3F	◎		Rwb Llimit
27	H	59	◎		Bwb Hlimit
	L	48	◎		Rwb Hlimit
28	H	00	※		Baxisth
	L	51	◎		Raxisth
29	H	AC	※		Y-Base
	L	00	※		Dark level
2A	H	88	※		
	L	00	※		
2B	H	99	※		AWB CTL
	L	02	※		(FLICKER/SH/
2C	H	6F	※	AWB	ALC SH etcs)
	L	00	※		
2D	H	10	※		
	L	02	※		
2E	H	05	※		
	L	40	※		
2F	H	A0	※		
	L	28	※		
30	H	36	◎		B-Y GC 6000
	L	3F	◎		R-Y GC 6000
31	H	36	▼		B-Y GC 5100
	L	3F	▼		R-Y GC 5100
32	H	3E	◎		B-Y GC 4500
	L	3F	◎		R-Y GC 4500
33	H	4E	◎		B-Y GC 3600
	L	4F	◎		R-Y GC 3600
34	H	61	▼		B-Y GC 3100
	L	3E	▼		R-Y GC 3100
35	H	61	◎	AWB	B-Y GC 2800
	L	3E	◎		R-Y GC 2800
36	H	33	◎		B-Y WB 6000
	L	3F	◎		R-Y WB 6000
37	H	59	▼		B-Y WB 3100
	L	48	▼		R-Y WB 3100
38	H	6B	◎		B-Y WB 4500
	L	47	◎		R-Y WB 4500
39	H	7B	◎		B-Y WB 3600
	L	4D	◎		R-Y WB 3600
3A	H	8F	▼		B-Y WB 3100
	L	6D	▼		R-Y WB 3100
3B	H	8F	◎		B-Y WB 2800
	L	6D	◎		R-Y WB 2800
3C	H	59	◎		B-Y WB 4900
	L	48	◎		R-Y WB 4900
3D	H	19	◎		WB SH HOLOGEN
	L	02	◎		VS TIME
3E	H	00	●		NOT USED
	L	00	●		NOT USED
3F	H	00	●		NOT USED
	L	00	●		NOT USED
40	H	00	※		
	L	00	※		
41	H	00	※		
	L	00	※		
42	H	0E	※	AWB	FLAG/
	L	08	※		BACK-UP
43	H	00	※		
	L	00	※		
44	H	40	※		
	L	70	※		
45	H	12	※		
	L	C5	※		
46	H	11	※	AE	FLAG/
	L	0E	※		BACK-UP
47	H	15	※		
	L	53	※		
48	H	06	※		
	L	01	※		
49	H	16	※		
	L	51	※		
4A	H	49	※		
	L	4F	※		
4B	H	40	※		
	L	23	※		
4C	H	ED	※	DIS	FLAG/
	L	05	※		BACK-UP
4D	H	00	※		
	L	00	※		
4E	H	00	※		
	L	00	※		
4F	H	80	※		
	L	02	※		
50	H	00	※		
	L	00	※		
51	H	14	※		
	L	14	※		
52	H	1C	※		
	L	8A	※		
53	H	20	※		
	L	10	※		
54	H	06	※		
	L	A3	※		
55	H	34	※		
	L	FF	※		
56	H	09	※		
	L	FF	※		
57	H	F3	※		
	L	E6	※		
58	H	CD	※		PICTURE CTL
	L	B3	※		(AGC/
59	H	0B	※		IRIS etcs)
	L	9F	※		
5A	H	7B	※		
	L	5C	※		
5B	H	4F	※		
	L	03	※		
5C	H	B6	※		
	L	2E	※		
5D	H	18	※		
	L	10	※		
5E	H	83	※		
	L	20	※		
5F	H	30	※		
	L	**	※		
60	H	70	※		
	L	FF	※		
61	H	00	※		
	L	76	※		
62	H	00	※		
	L	00	※		
63	H	00	※		
	L	00	※		
64	H	02	※		
	L	10	※		
65	H	00	※		
	L	00	※		
66	H	00	※		
	L	00	※		
67	H	00	※		
	L	00	※		
68	H	5E	※		
	L	56	※		DIGITAL CTL
69	H	48	※		(FLAG/BACK UP
	L	C4	※		FOR DIS/D.ZOOM
6A	H	0F	※		etcs)
	L	7C	※		
6B	H	8C	※		
	L	41	※		
6C	H	08	※		
	L	1A	※		
6D	H	DB	※		
	L	00	※		
6E	H	82	※		
	L	00	※		
6F	H	00	※		
	L	00	※		
70	H	00	※		D.Z MAX
	L	34	※		MODEL.NO
71	H	31	※		ZOOM CTL
	L	A2	※		ZOOM CTL
72	H	15	※		D.Z SW
	L	32	※		D.Z SW
73	H	05	※		D.Z SW
	L	00	※		D.Z SW
74	H	00	※		CENTER
	L	8E	※		PANNIG SH
75	H	A0	※		D.Z CTL
	L	00	※		CORE
76	H	60	※		TIMER
	L	64	※		T-AVERAGE
77	H	80	※		T-AVERAGE
	L	40	※		T-AVERAGE
78	H	34	※		T-AVERAGE
	L	50	※		T-AVERAGE
79	H	90	※		GAIN-TABLE
	L	00	※		GAIN-TABLE
7A	H	00	※	DIS/	DIS-MODE
	L	A0	※	D.Z	CCD-CLIP
7B	H	6C	※		T-WIPE/MIX
	L	6C	※		D.Z V-CLIP
7C	H	A0	※		DELAY
	L	6C	※		D.Z V-CLIP
7D	H	04	※		DELAY
	L	04	※		DELAY
7E	H	00	※		CCD-CLIP
	L	00	※		CCD-CLIP
7F	H	00	※		CCD-CLIP
	L	00	※		CCD-CLIP

※ :FIXED DATA
◎ :AUTO CALCULATION DATA
▼ :ADJUSTMENT DATA
● :NOT USED

EEPROM MAP(2) for NV-R33/R330

ADR	H/L	DATA		ITEM	ADR	H/L	DATA		ITEM	ADR	H/L	DATA		ITEM	ADR	H/L	DATA		ITEM
80	H	75	※		A0	H	00	●		C0	H	20	※		E0	H	01	※	
	L	82	※			L	00	●			L	20	※			L	72	※	
81	H	B6	※		A1	H	00	●		C1	H	34	※	AF & ZOOM	E1	H	08	※	AF/ZOOM/DIS
	L	C9	※			L	00	●	NOT USE		L	80	※	ALGORITHM		L	08	※	ALGORITHM
82	H	77	※		A2	H	00	●		C2	H	20	※	(VL/VH &	E2	H	C4	※	(VL/VH &
	L	63	※			L	00	●			L	24	※	S.HOLD/AGC		L	04	※	S.HOLD/AGC
83	H	F0	※	BACK UP &	A3	H	00	●		C3	H	40	※	etc...)	E3	H	10	※	etc...)
	L	07	※	FLAG FOR		L	00	●			L	00	※			L	08	※	
84	H	0F	※	INITIAL	A4	H	78	▼	ALC LEVEL	C4	H	40	※		E4	H	04	※	
	L	00	※	SETTING OF		L	F2	※			L	00	※			L	10	※	
85	H	00	※	CAMERA UNIT	A5	H	D3	▼	V-SUB	C5	H	00	※		E5	H	33	※	
	L	67	※			L	B8	▼	Z.ENC WIDE		L	00	※			L	02	※	
86	H	00	※		A6	H	66	▼	Z.ENC TELE	C6	H	60	※		E6	H	00	※	
	L	00	※			L	73	▼	HALL AMP		L	B0	※			L	05	※	
87	H	86	※		A7	H	AC	▼	HALL AMP G	C7	H	60	※		E7	H	00	※	
	L	00	※			L	79	▼	PWM		L	C6	※			L	06	※	
88	H	73	※		A8	H	90	▼	PEDESTAL	C8	H	50	※		E8	H	04	※	
	L	**	※			L	41	▼	AGC LEVEL		L	50	※			L	08	※	
89	H	00	※		A9	H	8B	▼	A/D INPUT	C9	H	10	※		E9	H	06	※	
	L	00	※			L	CD	▼	Y-CLIP LEVEL		L	10	※			L	F5	※	
8A	H	00	※		AA	H	2E	※		CA	H	20	※		EA	H	12	※	
	L	00	※			L	32	※			L	06	※			L	01	※	
8B	H	82	※		AB	H	3C	▼	REC C	CB	H	1B	※		EB	H	28	※	
	L	45	※			L	68	▼	REC Y		L	C0	※			L	78	※	
8C	H	70	※		AC	H	36	※		CC	H	20	※		EC	H	52	※	
	L	14	※			L	00	●			L	40	※			L	81	※	
8D	H	82	※		AD	H	00	●	NOT USE	CD	H	0A	※		ED	H	00	※	
	L	45	※			L	00	●			L	0A	※			L	00	※	
8E	H	70	※		AE	H	6D	▼	PG SHIFTER	CE	H	50	※		EE	H	00	※	
	L	14	※			L	00	●			L	50	※			L	00	※	
8F	H	25	※		AF	H	00	●	NOT USE	CF	H	20	※		EF	H	20	※	
	L	E0	※			L	00	●			L	80	※			L	55	※	
90	H	40	※		B0	H	F1	▼	FRE.ADR(F.ENC)	D0	H	22	※		F0	H	00	※	
	L	F8	※			L	00	▼	ZOOM.SPEED		L	22	※			L	00	※	
91	H	72	※		B1	H	FD	▼	5.POS.TRACKING	D1	H	22	※		F1	H	00	※	PRODUCT
	L	10	※			L	FD	▼	5.POS.TRACKING		L	33	※			L	00	※	INFORMATION
92	H	D0	※		B2	H	F3	▼	ZOOM.SPEED	D2	H	44	※		F2	H	00	※	(LINE/UNIT
	L	0D	※			L	02	※	ZOOM.TRACKING		L	55	※			L	00	※	DATE/TIME
93	H	50	※		B3	H	0A	※		D3	H	55	※		F3	H	00	※	NTSC/PAL
	L	13	※			L	06	※			L	55	※			L	00	※	etc..)
94	H	20	※		B4	H	40	※		D4	H	33	※		F4	H	02	※	
	L	10	※			L	08	※			L	55	※			L	11	※	
95	H	D0	※		B5	H	80	※	AF & ZOOM	D5	H	75	※		F5	H	01	※	
	L	11	※			L	20	※	ALGORITHM		L	77	※			L	03	※	
96	H	24	※		B6	H	3C	※	(TRACKING AREA	D6	H	11	※		F6	H	00	※	
	L	2F	※			L	10	※	FILTER SW/		L	11	※			L	34	※	
97	H	00	※		B7	H	64	※	ZOOM CTL/	D7	H	21	※		F7	H	C0	※	
	L	00	※			L	C8	※	etc...)		L	22	※			L	60	※	
98	H	06	※		B8	H	5A	※		D8	H	11	※		F8	H	21	※	
	L	D0	※			L	08	※			L	21	※			L	00	※	
99	H	08	※		B9	H	12	※		D9	H	33	※		F9	H	11	※	
	L	86	※			L	01	※			L	44	※			L	00	※	
9A	H	40	※		BA	H	00	※		DA	H	22	※		FA	H	10	※	
	L	65	※			L	FF	※			L	32	※			L	0E	※	
9B	H	40	※		BB	H	00	※		DB	H	54	※		FB	H	65	※	
	L	15	※			L	18	※			L	76	※			L	00	※	
9C	H	C0	※		BC	H	18	※		DC	H	12	※		FC	H	38	※	
	L	00	※			L	3C	※			L	01	※			L	00	※	
9D	H	08	※		BD	H	40	※		DD	H	56	※		FD	H	04	※	
	L	FF	※			L	80	※			L	33	※			L	00	※	
9E	H	FF	※		BE	H	01	※		DE	H	23	※		FE	H	4F	※	
	L	01	※			L	02	※			L	11	※			L	05	※	
9F	H	FF	※		BF	H	08	※		DF	H	34	※		FF	H	2D	※	
	L	00	●	NOT USE		L	08	※			L	22	※			L	0B	※	

※:FIXED DATA
◎:AUTO CALICULATION DATA
▼:ADJUSTMENT DATA
●:NOT USED

EEPROM MAP(1) for NV-R55/R550

ADR	H/L	DATA			ITEM
00	H	FF	※		
	L	00	※		
01	H	00	※		ALC flag
	L	00	※		
02	H	00	※		
	L	00	※		HSS LIMIT
03	H	07	※		
	L	05	※		
04	H	0E	※		AGC CTL
	L	0A	※		
05	H	15	※		
	L	0F	※		
06	H	2E	※		DIS CTL FOR AE
	L	58	※		DIS CTL FOR AE
07	H	82	※		
	L	A1	※		
08	H	10	※		H.S.S CTL
	L	08	※		
09	H	20	※		
	L	CC	※		
0A	H	7B	※		HSS CTL/DIS
	L	08	※		AGC CTL/DIS
0B	H	74	※		WARNIG/DIS
	L	58	※		WARNIG/DIS
0C	H	F8	※		ALC SH
	L	ED	※		ALC SH
0D	H	F8	※		ALC SH
	L	D9	※		ALC SH
0E	H	10	※		AGC CTL/L.LIGHT
	L	0E	※		AGC CTL/NORMAL
0F	H	16	※		M.IRIS CTL
	L	00	※		M.IRIS CTL
10	H	1D	◎		B L-LIMIT6000
	L	2B	◎		R L-LIMIT6000
11	H	14	◎		B L-LIMIT5100
	L	2B	◎		R L-LIMIT5100
12	H	62	◎		B L-LIMIT4500
	L	3F	◎		R L-LIMIT4500
13	H	6D	◎		B L-LIMIT3600
	L	46	◎		R L-LIMIT3600
14	H	79	◎		B L-LIMIT3100
	L	59	◎		R L-LIMIT3100
15	H	88	◎	AWB	B L-LIMIT2800
	L	A2	◎		R L-LIMIT2800
16	H	14	◎		B H-LIMIT6000
	L	4D	◎		R H-LIMIT6000
17	H	61	◎		B H-LIMIT5100
	L	4D	◎		R H-LIMIT5100
18	H	6C	◎		B H-LIMIT4500
	L	4D	◎		R H-LIMIT4500
19	H	9F	◎		B H-LIMIT3600
	L	58	◎		R H-LIMIT3600
1A	H	BE	◎		B H-LIMIT3100
	L	A2	◎		R H-LIMIT3100
1B	H	C7	◎		B H-LIMIT2800
	L	EA	◎		R H-LIMIT2800
1C	H	2D	◎		B-Y G4900
	L	35	◎		R-Y G4900
1D	H	6A	◎		B-Y MAT 4900
	L	64	◎		R-Y MAT 4900
1E	H	B3	※		WB DETECT
	L	04	※		WB DETECT
1F	H	08	※		WB SHIFT SPEED
	L	19	※		WB SHIFT SPEED

ADR	H/L	DATA			ITEM
20	H	6A	◎		B-Y MAT 6000
	L	64	◎		R-Y MAT 6000
21	H	6A	▼		B-Y MAT 5100
	L	64	▼		R-Y MAT 5100
22	H	6F	◎		B-Y MAT 4500
	L	44	◎		R-Y MAT 4500
23	H	6C	◎		B-Y MAT 3600
	L	44	◎	AWB	R-Y MAT 3600
24	H	74	▼		B-Y MAT 5100
	L	44	▼		R-Y MAT 5100
25	H	74	◎		B-Y MAT 2800
	L	44	◎		R-Y MAT 2800
26	H	2A	◎		Bwb Llimit
	L	3B	◎		Rwb Llimit
27	H	53	◎		Bwb Hlimit
	L	44	◎		Rwb Hlimit
28	H	00	※		Baxisth
	L	4D	◎		Raxisth
29	H	AC	※		Y-Base
	L	00	※		Dark level
2A	H	88	※		
	L	00	※		
2B	H	99	※		AWB CTL
	L	02	※		(FLICKER/SH/
2C	H	6F	※	AWB	ALC SH etcs)
	L	00	※		
2D	H	10	※		
	L	02	※		
2E	H	05	※		
	L	40	※		
2F	H	A0	※		
	L	28	※		
30	H	2D	◎		B-Y GC 6000
	L	35	◎		R-Y GC 6000
31	H	2D	▼		B-Y GC 5100
	L	35	▼		R-Y GC 5100
32	H	34	◎		B-Y GC 4500
	L	35	◎		R-Y GC 4500
33	H	41	◎		B-Y GC 3600
	L	35	◎		R-Y GC 3600
34	H	51	▼		B-Y GC 3100
	L	34	▼		R-Y GC 3100
35	H	51	◎	AWB	B-Y GC 2800
	L	34	◎		R-Y GC 2800
36	H	2A	◎		B-Y WB 6000
	L	3B	◎		R-Y WB 6000
37	H	53	▼		B-Y WB 3100
	L	44	▼		R-Y WB 3100
38	H	67	◎		B-Y WB 4500
	L	43	◎		R-Y WB 4500
39	H	75	◎		B-Y WB 3600
	L	49	◎		R-Y WB 3600
3A	H	8D	▼		B-Y WB 3100
	L	6B	▼		R-Y WB 3100
3B	H	8D	◎		B-Y WB 2800
	L	6B	◎		R-Y WB 2800
3C	H	53	◎		B-Y WB 4900
	L	44	◎		R-Y WB 4900
3D	H	19	◎		WB SH HOLOGEN
	L	02	◎		VS TIME
3E	H	00	●		NOT USED
	L	00	●		NOT USED
3F	H	00	●		NOT USED
	L	00	●		NOT USED

ADR	H/L	DATA			ITEM
40	H	00	※		
	L	00	※		
41	H	00	※		
	L	00	※		
42	H	0E	※	AWB	FLAG/
	L	08	※		BACK-UP
43	H	00	※		
	L	00	※		
44	H	40	※		
	L	70	※		
45	H	12	※		
	L	C5	※		
46	H	11	※	AE	FLAG/
	L	0E	※		BACK-UP
47	H	15	※		
	L	53	※		
48	H	06	※		
	L	01	※		
49	H	17	※		
	L	00	※		
4A	H	00	※		
	L	00	※		
4B	H	00	※		
	L	00	※		
4C	H	00	※	DIS	FLAG/
	L	00	※		BACK-UP
4D	H	00	※		
	L	00	※		
4E	H	00	※		
	L	00	※		
4F	H	80	※		
	L	02	※		
50	H	00	※		
	L	00	※		
51	H	14	※		
	L	14	※		
52	H	1C	※		
	L	FB	※		
53	H	20	※		
	L	10	※		
54	H	06	※		
	L	A3	※		
55	H	A4	※		
	L	FF	※		
56	H	09	※		
	L	FF	※		
57	H	F3	※		
	L	E6	※		
58	H	CD	※		PICTURE CTL
	L	B3	※		(AGC/
59	H	0B	※		IRIS etcs)
	L	9F	※		
5A	H	7B	※		
	L	5C	※		
5B	H	4F	※		
	L	03	※		
5C	H	3A	※		
	L	26	※		
5D	H	18	※		
	L	10	※		
5E	H	83	※		
	L	20	※		
5F	H	30	※		
	L	**	※		

ADR	H/L	DATA			ITEM
60	H	70	※		
	L	FF	※		
61	H	00	※		
	L	76	※		
62	H	00	※		
	L	00	※		
63	H	00	※		
	L	00	※		
64	H	02	※		
	L	10	※		
65	H	00	※		
	L	00	※		
66	H	00	※		
	L	00	※		
67	H	00	※		
	L	00	※		
68	H	5E	※		
	L	56	※		DIGITAL CTL
69	H	48	※		(FLAG/BACK UP
	L	C4	※		FOR DIS/D.ZOOM
6A	H	0F	※		etcs)
	L	7C	※		
6B	H	8C	※		
	L	41	※		
6C	H	08	※		
	L	1A	※		
6D	H	DB	※		
	L	00	※		
6E	H	82	※		
	L	00	※		
6F	H	00	※		
	L	00	※		
70	H	D6	※		D.Z MAX
	L	74	※		MODEL.NO
71	H	31	※		ZOOM CTL
	L	A2	※		ZOOM CTL
72	H	15	※		D.Z SW
	L	32	※		D.Z SW
73	H	00	※		D.Z SW
	L	00	※		D.Z SW
74	H	04	※		CENTER
	L	B9	※		PANNIG SH
75	H	FC	※		D.Z CTL
	L	00	※		CORE
76	H	F0	※		TIMER
	L	55	※		T-AVERAGE
77	H	80	※		T-AVERAGE
	L	40	※		T-AVERAGE
78	H	34	※		T-AVERAGE
	L	1E	※		T-AVERAGE
79	H	5E	※		GAIN-TABLE
	L	00	※		GAIN-TABLE
7A	H	00	※	DIS/	DIS-MODE
	L	28	※	D.Z	CCD-CLIP
7B	H	E8	※		T-WIPE/MIX
	L	25	※		D.Z V-CLIP
7C	H	E0	※		DELAY
	L	20	※		D.Z V-CLIP
7D	H	18	※		DELAY
	L	00	※		DELAY
7E	H	00	※		CCD-CLIP
	L	00	※		CCD-CLIP
7F	H	19	※		CCD-CLIP
	L	17	※		CCD-CLIP

※:FIXED DATA
◎:AUTO CALICULATION DATA
▼:ADJUSTMENT DATA
●:NOT USED

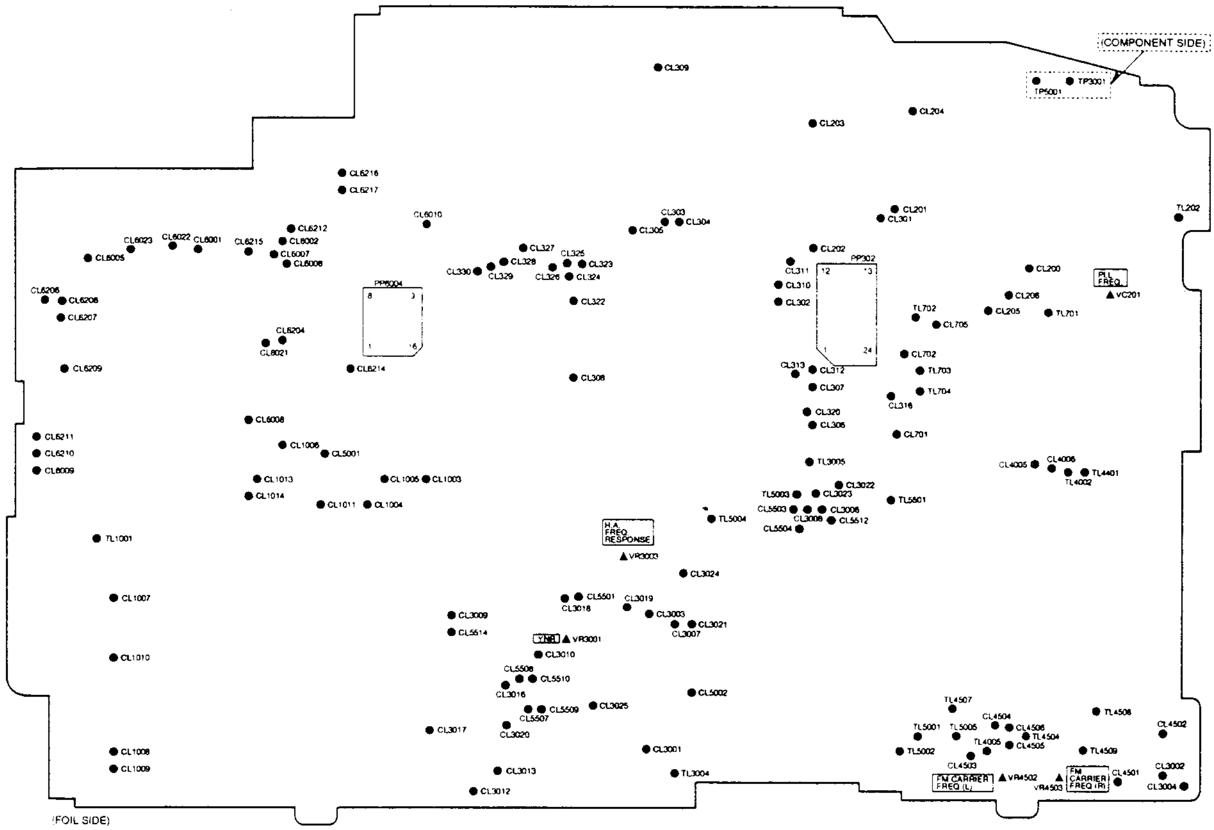
EEPROM MAP(2) for NV-R55/R550

ADR	H/L	DATA		ITEM	ADR	H/L	DATA		ITEM	ADR	H/L	DATA		ITEM	ADR	H/L	DATA		ITEM
80	H	75	※		A0	H	00	●		C0	H	20	※		E0	H	01	※	
	L	82	※			L	00	●			L	20	※			L	72	※	
81	H	B6	※		A1	H	00	●		C1	H	34	※	AF & ZOOM	E1	H	08	※	AF/ZOOM/DIS
	L	C9	※			L	00	●	NOT USE		L	50	※	ALGORITHM		L	08	※	ALGORITHM
82	H	77	※		A2	H	00	●		C2	H	20	※	(VL/VH &	E2	H	C4	※	(VL/VH &
	L	63	※			L	00	●			L	24	※	S.HOLD/AGC		L	04	※	S.HOLD/AGC
83	H	F0	※	BACK UP &	A3	H	00	●		C3	H	3C	※	etc...)	E3	H	10	※	etc...)
	L	07	※	FLAG FOR		L	00	●			L	58	※			L	08	※	
84	H	0F	※	INITIAL	A4	H	7D	▼	ALC LEVEL	C4	H	34	※		E4	H	04	※	
	L	00	※	SETTING OF		L	F2	※			L	58	※			L	01	※	
85	H	00	※	CAMERA UNIT	A5	H	C6	▼	V-SUB	C5	H	00	※		E5	H	33	※	
	L	83	※			L	AF	▼	Z.ENC WIDE		L	00	※			L	02	※	
86	H	00	※		A6	H	40	▼	Z.ENC TELE	C6	H	5A	※		E6	H	00	※	
	L	00	※			L	85	▼	HALL AMP		L	80	※			L	05	※	
87	H	86	※		A7	H	AB	▼	HALL AMP G	C7	H	5A	※		E7	H	00	※	
	L	00	※			L	7D	▼	PWM		L	80	※			L	06	※	
88	H	73	※		A8	H	BC	▼	PEDESTAL	C8	H	50	※		E8	H	04	※	
	L	**	※			L	41	▼	AGC LEVEL		L	50	※			L	08	※	
89	H	00	※		A9	H	92	▼	A/D INPUT	C9	H	10	※		E9	H	06	※	
	L	00	※			L	CB	▼	Y-CLIP LEVEL		L	30	※			L	F5	※	
8A	H	00	※		AA	H	45	※		CA	H	20	※		EA	H	12	※	
	L	00	※			L	3D	※			L	06	※			L	01	※	
8B	H	02	※		AB	H	9B	▼	REC C	CB	H	1B	※		EB	H	28	※	
	L	45	※			L	5C	▼	REC Y		L	B0	※			L	78	※	
8C	H	70	※		AC	H	37	※		CC	H	20	※		EC	H	52	※	
	L	14	※			L	00	●			L	40	※			L	81	※	
8D	H	02	※		AD	H	00	●	NOT USE	CD	H	0A	※		ED	H	00	※	
	L	45	※			L	00	●			L	0A	※			L	00	※	
8E	H	70	※		AE	H	42	▼	PG SHIFTER	CE	H	50	※		EE	H	00	※	
	L	14	※			L	00	●			L	50	※			L	00	※	
8F	H	25	※		AF	H	00	●	NOT USE	CF	H	20	※		EF	H	20	※	
	L	E0	※			L	00	●			L	80	※			L	56	※	
90	H	40	※		B0	H	E5	▼	FRE.ADR(F.ENC)	D0	H	22	※		F0	H	FF	※	
	L	F8	※			L	00	▼	ZOOM.SPEED		L	22	※			L	FF	※	
91	H	72	※		B1	H	FF	▼	5.POS.TRACKING	D1	H	22	※		F1	H	FF	※	PRODUCT
	L	10	※			L	FD	▼	5.POS.TRACKING		L	22	※			L	FF	※	INFORMATION
92	H	D0	※		B2	H	F6	▼	ZOOM.SPEED	D2	H	22	※		F2	H	FF	※	(LINE/UNIT
	L	0D	※			L	02	※	ZOOM.TRACKING		L	55	※			L	FF	※	DATE/TIME
93	H	50	※		B3	H	0A	※		D3	H	55	※		F3	H	FF	※	NTSC/PAL
	L	13	※			L	06	※			L	55	※			L	FF	※	etc..)
94	H	20	※		B4	H	40	※		D4	H	33	※		F4	H	02	※	
	L	10	※			L	08	※			L	55	※			L	10	※	
95	H	D0	※		B5	H	80	※	AF & ZOOM	D5	H	75	※		F5	H	01	※	
	L	11	※			L	20	※	ALGORITHM		L	77	※			L	53	※	
96	H	24	※		B6	H	3C	※	(TRACKING AREA	D6	H	11	※		F6	H	FF	※	
	L	2F	※			L	10	※	FILTER SW/		L	11	※			L	34	※	
97	H	00	※		B7	H	64	※	ZOOM CTL/	D7	H	21	※		F7	H	B8	※	
	L	00	※			L	C8	※	etc...)		L	22	※			L	35	※	
98	H	06	※		B8	H	5A	※		D8	H	11	※		F8	H	31	※	
	L	D0	※			L	08	※			L	21	※			L	FF	※	
99	H	08	※		B9	H	12	※		D9	H	33	※		F9	H	11	※	
	L	86	※			L	01	※			L	44	※			L	FF	※	
9A	H	40	※		BA	H	00	※		DA	H	22	※		FA	H	00	※	
	L	6C	※			L	FF	※			L	32	※			L	0F	※	
9B	H	40	※		BB	H	00	※		DB	H	54	※		FB	H	27	※	
	L	2A	※			L	18	※			L	76	※			L	FF	※	
9C	H	C0	※		BC	H	18	※		DC	H	12	※		FC	H	29	※	
	L	00	※			L	3C	※			L	01	※			L	FF	※	
9D	H	08	※		BD	H	40	※		DD	H	56	※		FD	H	05	※	
	L	FF	※			L	80	※			L	33	※			L	FF	※	
9E	H	FF	※		BE	H	01	※		DE	H	23	※		FE	H	02	※	
	L	01	※			L	02	※			L	11	※			L	05	※	
9F	H	FF	※		BF	H	08	※		DF	H	34	※		FF	H	2F	※	
	L	00	●	NOT USE		L	08	※			L	22	※			L	0F	※	

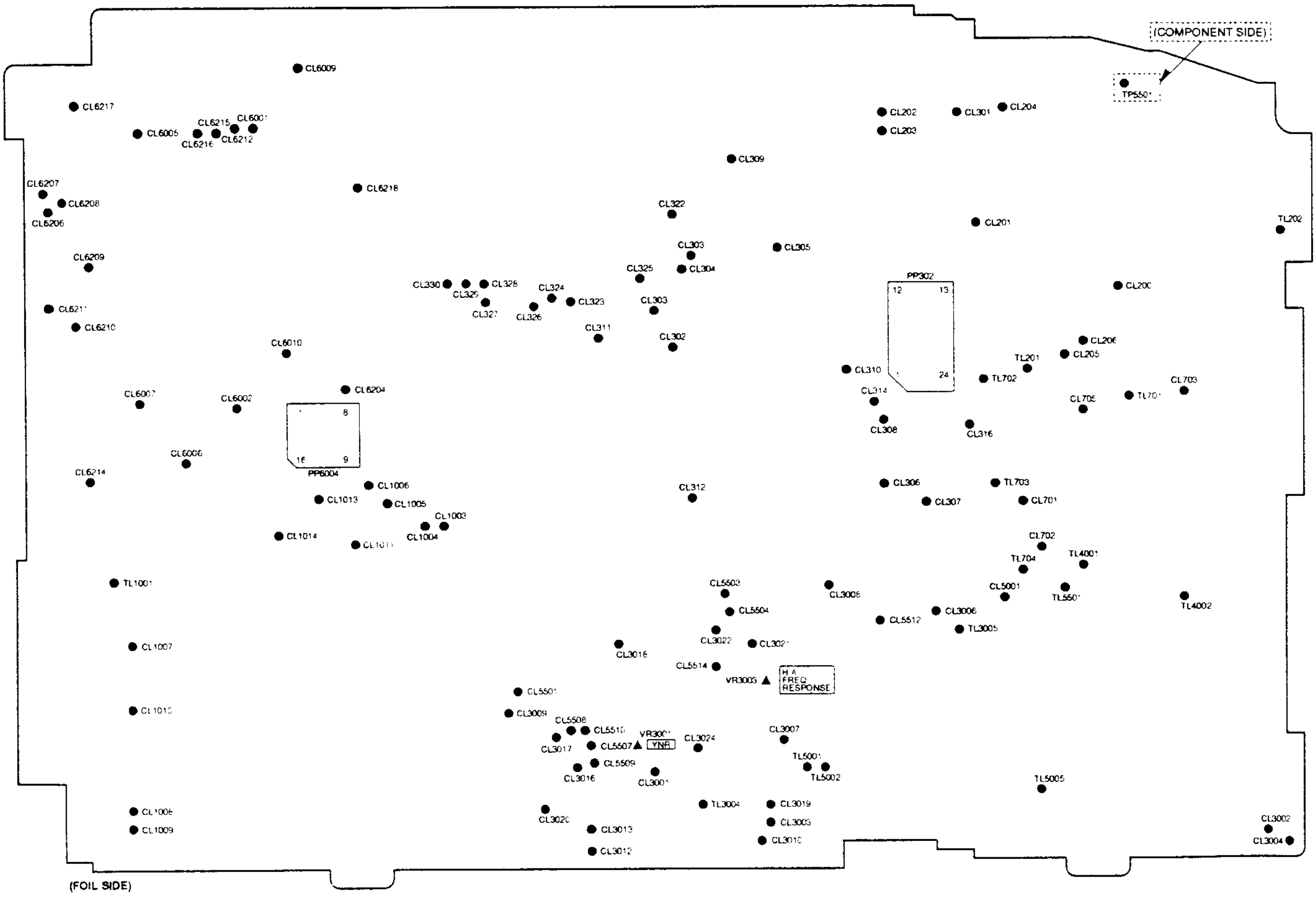
LOCATION OF TEST POINTS & CONTROLS

NV-R33/R330

LOCATION OF TEST POINTS & CONTROLS (MAIN C.B.A.)


(COMPONENT SIDE)
TP5001
TP3001
CL309
CL204
CL203
CL6216
CL6217
CL6010
CL303
CL304
CL305
CL201
CL301
TL202
CL6212
CL6002
CL6023
CL6022
CL6001
CL6215
CL6007
CL6005
CL6006
CL327
CL325
CL323
CL328
CL329
CL330
CL326
CL324
CL202
PP302
12
13
CL311
CL200
PLL FREQ.
VC201
CL6206
CL6208
CL6207
PP6004
8
9
1
16
CL322
CL310
CL302
CL206
CL205
TL701
TL702
CL705
CL6204
CL6021
CL6209
CL6214
CL308
1
24
CL313
CL312
CL307
CL702
TL703
TL704
CL316
CL320
CL306
CL701
CL6008
CL6211
CL6210
CL6009
CL1006
CL5001
CL1013
CL1014
CL1005
CL1003
CL1011
CL1004
TL3005
CL4005
CL4006
TL4401
TL4002
CL3022
TL5003
CL3023
TL5501
CL5503
CL3006
CL3008
CL5512
CL5504
TL5004
H.A. FREQ. RESPONSE
VR3003
TL1001
CL3024
CL1007
CL5501
CL3018
CL3019
CL3003
CL3021
CL3007
CL3009
CL5514
Y NR
VR3001
CL3010
CL1010
CL5508
CL5510
CL3016
CL5002
CL5509
CL5507
CL3025
CL3017
CL3020
TL4507
CL4504
TL5001
TL5005
CL4506
TL4504
TL4005
CL4505
TL4508
CL4502
TL5002
CL4503
TL4509
CL1008
CL1009
CL3001
CL3013
TL3004
CL3012
FM CARRIER FREQ (L)
VR4502
VR4503
FM CARRIER FREQ (R)
CL4501
CL3002
CL3004
(FOIL SIDE)

LOCATION OF TEST POINTS & CONTROLS (MAIN C.B.A.)


(COMPONENT SIDE)
TP5501
CL6009
CL6217
CL6005
CL6215
CL6001
CL6216
CL6212
CL6207
CL6208
CL6206
CL6218
CL6209
CL6211
CL6210
CL6010
CL6007
CL6002
CL6204
CL6006
CL6214
1
8
16
9
PP6004
CL1006
CL1013
CL1005
CL1003
CL1004
CL1014
CL1011
TL1001
CL1007
CL1010
CL1008
CL1009
CL330
CL329
CL328
CL327
CL324
CL326
CL323
CL325
CL303
CL304
CL303
CL311
CL302
CL322
CL309
CL305
CL202
CL203
CL301
CL204
CL201
TL202
PP302
12
13
24
CL200
CL206
CL205
TL201
CL310
TL702
CL314
CL308
CL316
CL705
TL701
CL703
CL312
CL306
CL307
TL703
CL701
CL702
TL704
TL4001
CL5001
TL5501
TL4002
CL5503
CL5504
CL3008
CL5512
CL3006
TL3005
CL3022
CL3021
CL3018
CL5514
VR3003
H.A FREQ RESPONSE
CL5501
CL3009
CL5508
CL5510
VR3001
CL3017
CL5507
YNR
CL3024
CL5509
CL3016
CL3001
CL3007
TL5001
TL5002
TL5005
TL3004
CL3019
CL3003
CL3010
CL3020
CL3013
CL3012
CL3002
CL3004
(FOIL SIDE)

ORDER NO. VMD9412M130

Service Manual

Panasonic VHS C

S VHS C

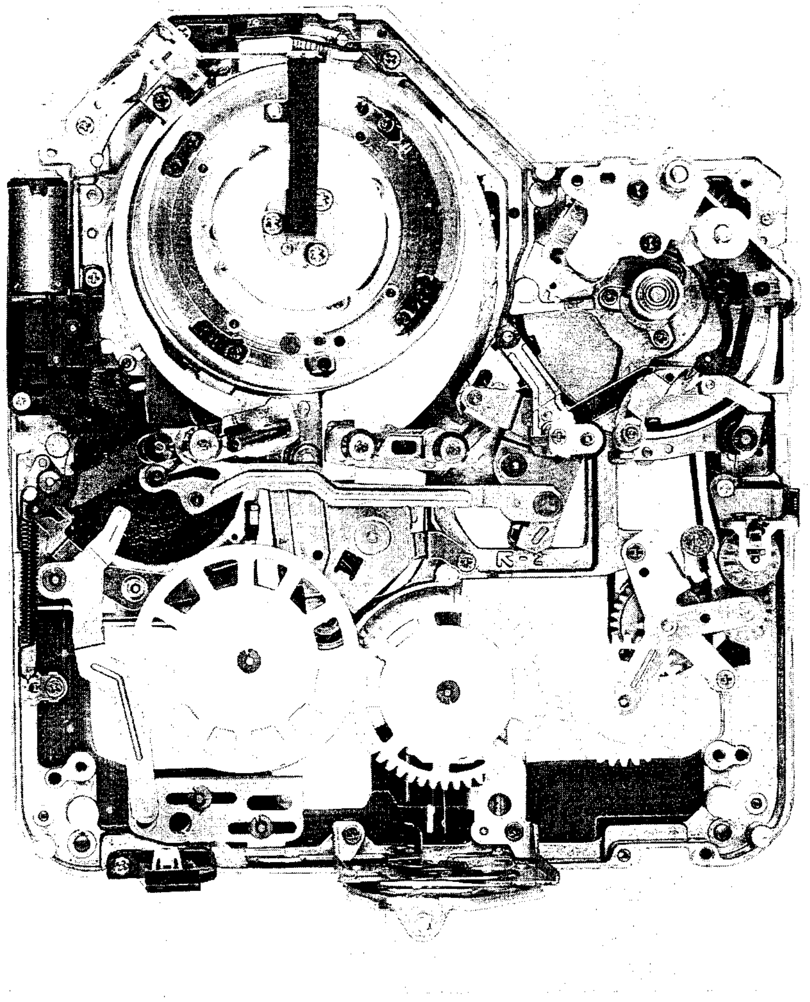
General Description
Adjustment Procedures
Disassembly/Assembly
Service Hints

V11317

VHS-C MOVIE

DL-MECHANISM

(Since 1991 Models)



Panasonic

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⚠ **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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SERVICE MESUREMENT EQUIPMENTS 6
STANDARD SETTING 6
NEW SERVICE DEVICE KIT "TATSUJIN" 7

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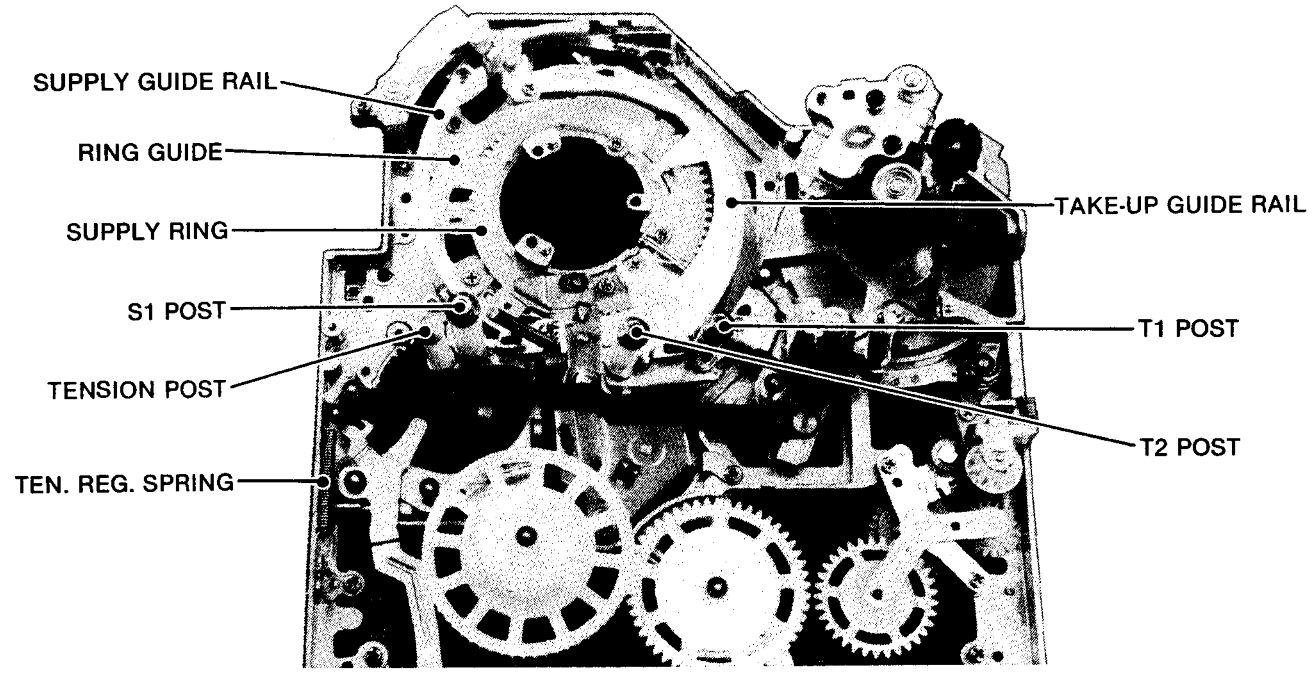
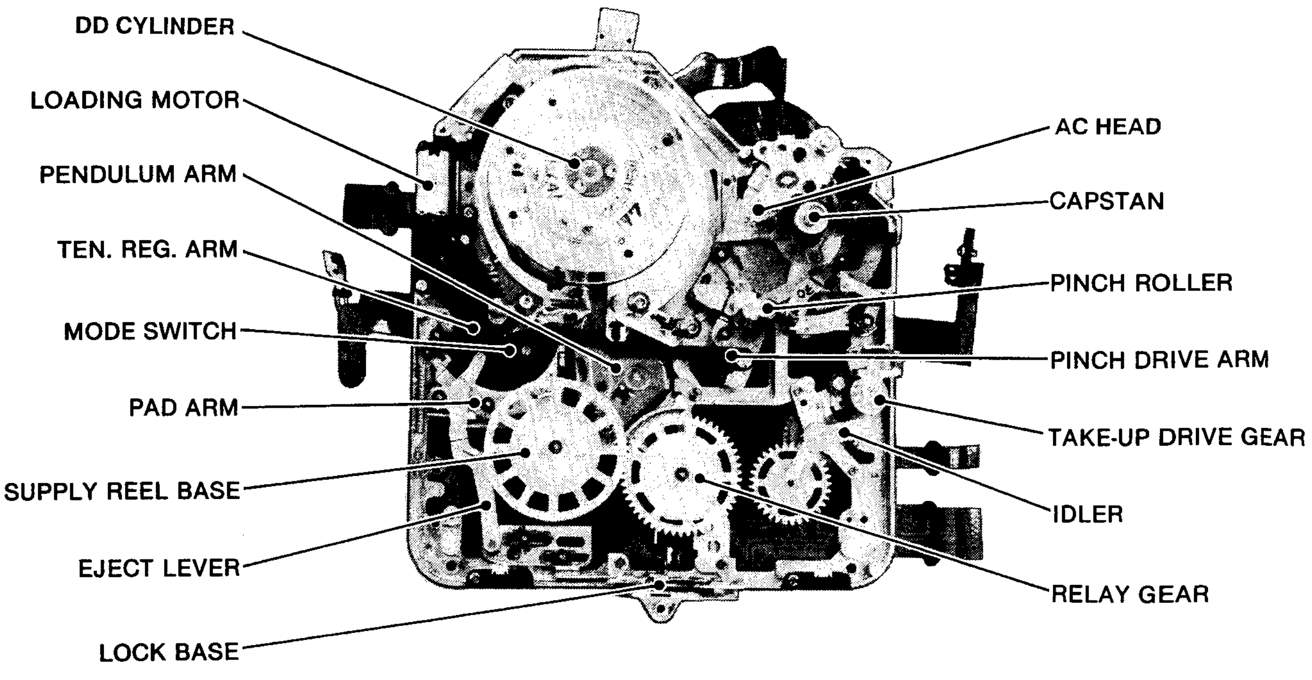
1 MOVEMENT OF MECHANISM

1. Name of Mechanism

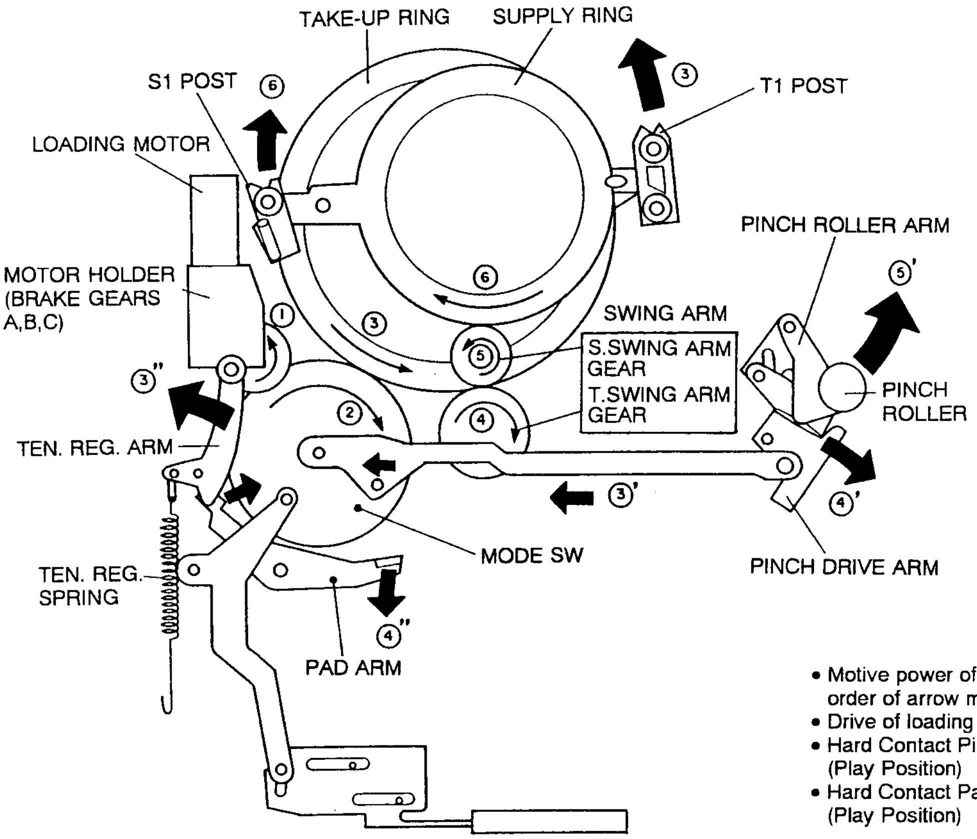

SUPPLY GUIDE RAIL
RING GUIDE
SUPPLY RING
S1 POST
TENSION POST
TEN. REG. SPRING
TAKE-UP GUIDE RAIL
T1 POST
T2 POST

* TAKE-UP RING is located underneath of RING GUIDE.


DD CYLINDER
LOADING MOTOR
PENDULUM ARM
TEN. REG. ARM
MODE SWITCH
PAD ARM
SUPPLY REEL BASE
EJECT LEVER
LOCK BASE
AC HEAD
CAPSTAN
PINCH ROLLER
PINCH DRIVE ARM
TAKE-UP DRIVE GEAR
IDLER
RELAY GEAR

2.Mechanical Operation

2–1. Loading operation


TAKE-UP RING
SUPPLY RING
S1 POST
⑥
③
T1 POST
LOADING MOTOR
PINCH ROLLER ARM
⑤'
MOTOR HOLDER
(BRAKE GEARS
A,B,C)
⑥
①
③
SWING ARM
S.SWING ARM
GEAR
T.SWING ARM
GEAR
⑤
PINCH
ROLLER
③"
②
④
TEN. REG. ARM
③'
④'
MODE SW
PINCH DRIVE ARM
TEN. REG.
SPRING
④"
PAD ARM

- Motive power of loading motor is transferred by order of arrow mark.
- Drive of loading post.
- Hard Contact Pinch Roller with capstan shaft. (Play Position)
- Hard Contact Pad Arm with S.Reel table. (Play Position)

Fig. 1 Loading Mechanism

2–2. Eject operation

- Motive power of loading motor is transferred by numerical order.
  After cassette up operation, those gears are moved to opposite of arrow's direction, to turn back stop 1 condition.

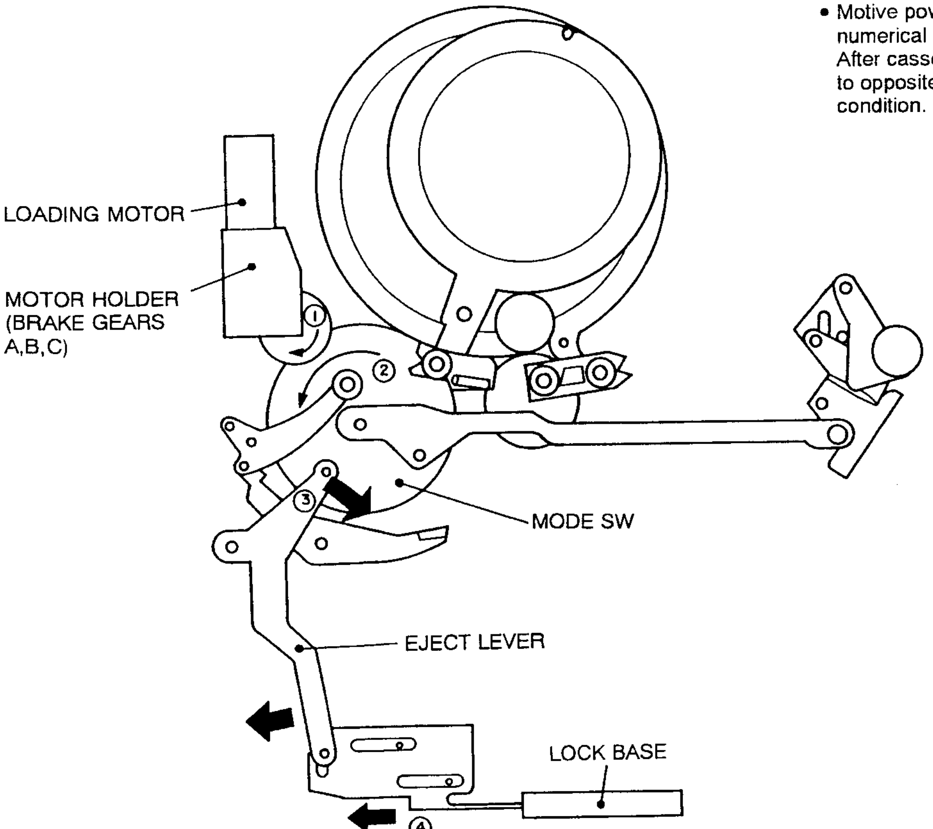

LOADING MOTOR
MOTOR HOLDER
(BRAKE GEARS
A,B,C)
①
②
③
MODE SW
EJECT LEVER
LOCK BASE
④

Fig. 2 Unloading Mechanism

3. Movement of Reel Table

3–1. FF operation

- Motive power of Capstan motor is transferred to Idler (Center clutch Gear) through the capstan belt.
  At this time, position of Idler is decided by rotation of capstan motor.
  After that, motive power is transferred by numerical order.
  Finally, Take-up Reel is rotated by T.Drive Gear.
- Pad Arm is moved by Ten. Reg. Arm and then contact with lower side of S.Reel table in order to apply back tension to tape.

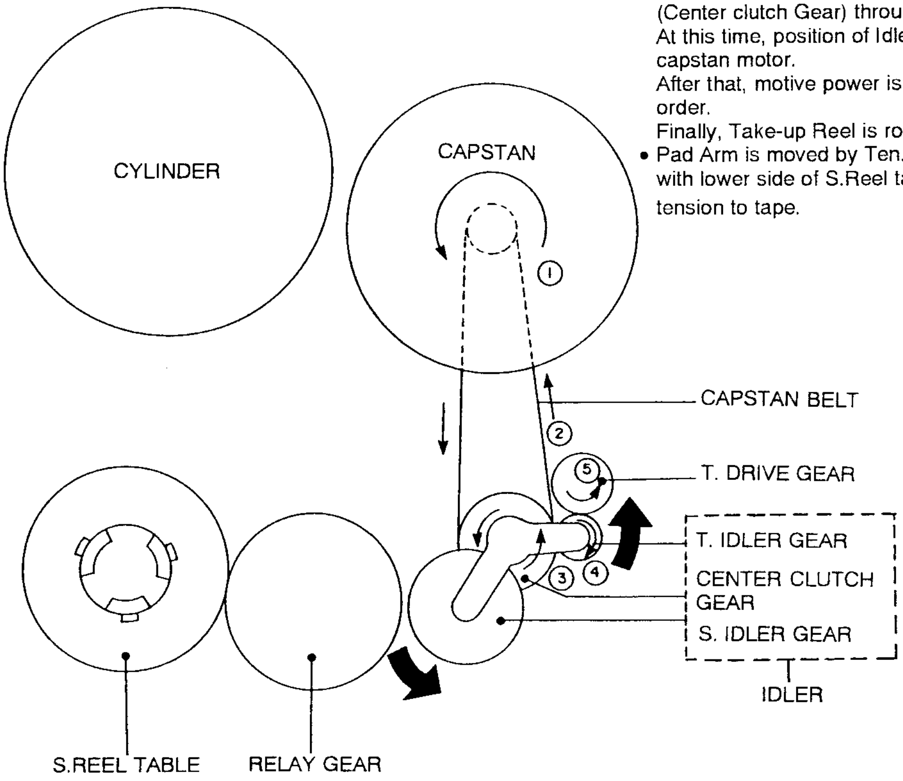

CYLINDER
CAPSTAN
①
CAPSTAN BELT
②
T. DRIVE GEAR
⑤
T. IDLER GEAR
CENTER CLUTCH GEAR
S. IDLER GEAR
③
④
IDLER
S.REEL TABLE
RELAY GEAR

Fig. 3 Take-Up side of Reel Drive

3–2. REW operation

- Motive power is transmitted in numerical order. At this time, Idler contacts to Relay Gear by capstan rotation.

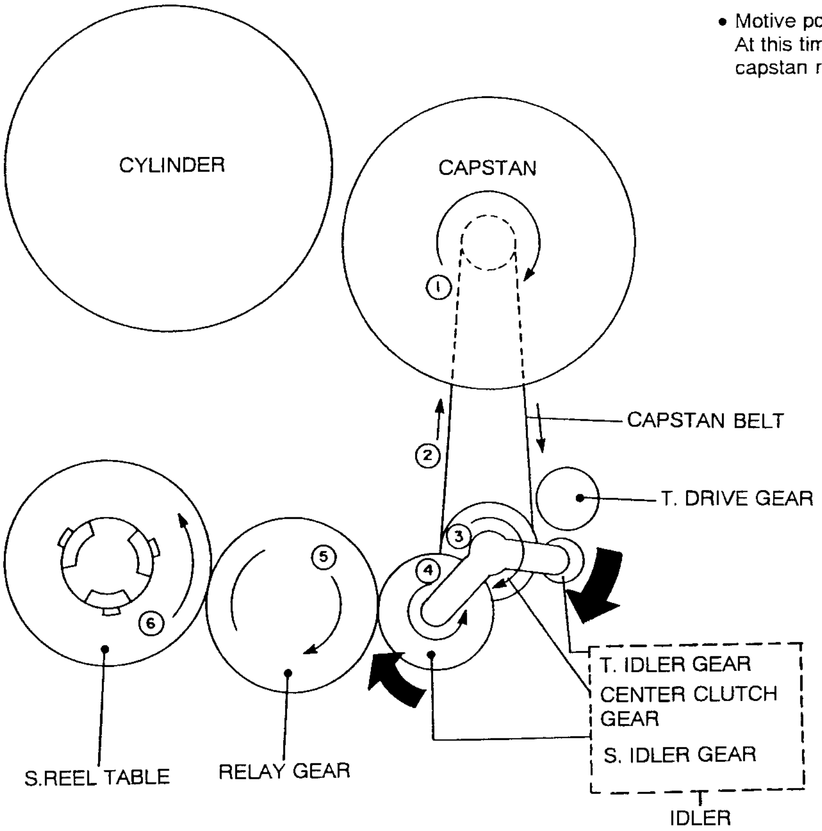

CYLINDER
CAPSTAN
①
CAPSTAN BELT
②
T. DRIVE GEAR
③
④
⑤
⑥
T. IDLER GEAR
CENTER CLUTCH GEAR
S. IDLER GEAR
IDLER
S.REEL TABLE
RELAY GEAR

Fig. 4 Supply side of Reel drive

2 ALIGNMENT OF MECHANISM

Following mechanichal phase condition is important for mechanical alignment.

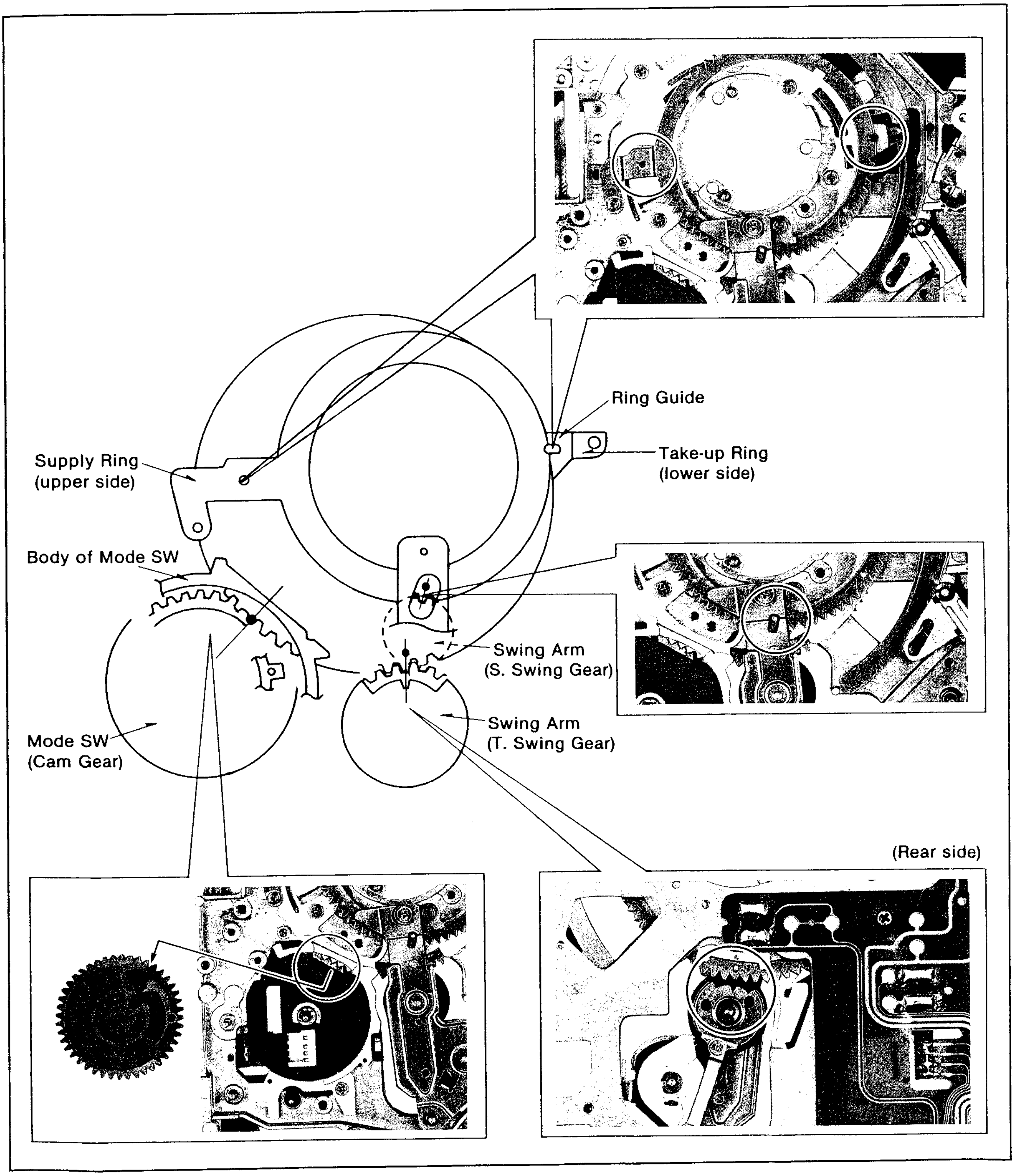
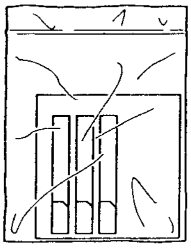
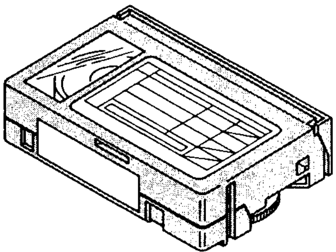
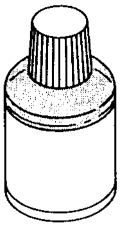
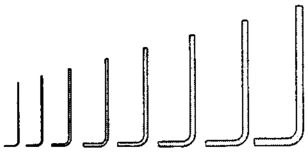
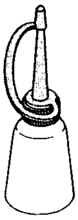
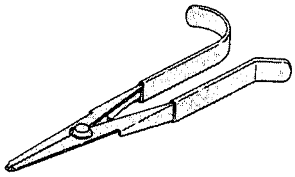
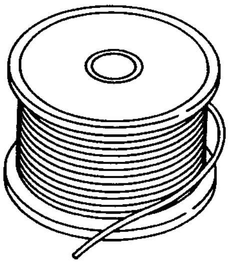
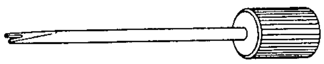
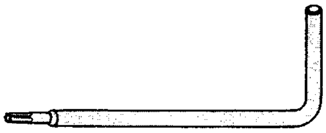
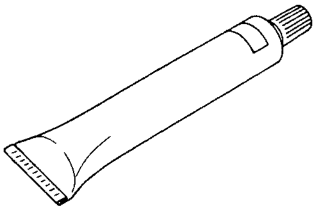

Ring Guide
Take-up Ring
(lower side)
Supply Ring
(upper side)
Body of Mode SW
Swing Arm
(S. Swing Gear)
Swing Arm
(T. Swing Gear)
Mode SW
(Cam Gear)
(Rear side)

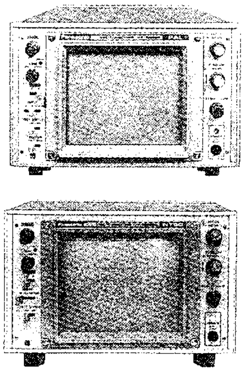
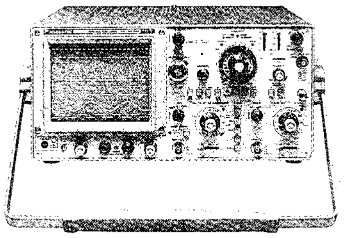
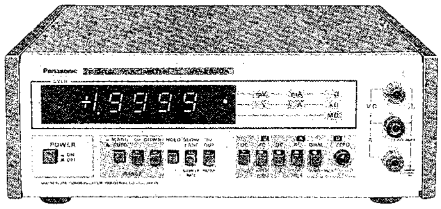
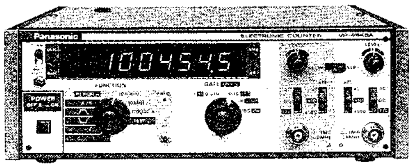
Fig. 5 Mechanism Phase

SERVICING FIXTURES & TOOLS FOR MOVIE CAMERA

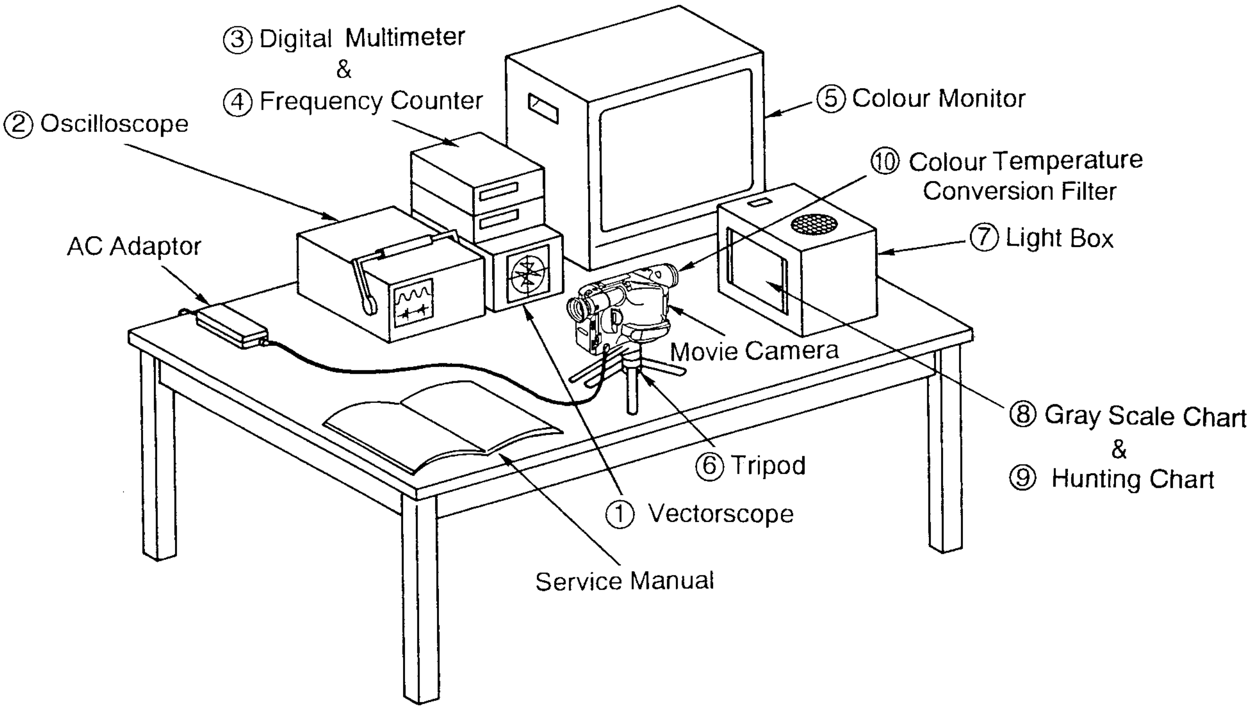
ITEM	PURPOSE	ITEM	PURPOSE
Head Cleaning Stick Order No. VFK27 	For head cleaning	VHS-C Alignment Tape NTSC: Order No. VFM8081HQPP PAL: Order No. VFM8180HUPF 	For 1)Tape Interchangeability adj. 2)Checking colour
Solder Flux Order No. RZZ0320 	For smooth and secure soldering	Hex. Key Wrench set (8 pcs.) Order No. VFK0326  0.7mm,0.9mm,1.2mm,1.5mm, 1.6mm,2.0mm,2.4mm,3.0mm	For height adjustment of Tape Guide Posts
Oil Order No. VFK0131 	For Reel Shaft & Capstan Shaft	Retaining Ring Remover Order No. VFK0335 	For removal of Retaining Ring
0.4mm Solder Order No. VFK0732 	For Soldering flat-pack IC	H-Position Adjustment Driver Order No. VFK0743 	For horizontal position adjustment of A/C Head
Asterisk Wrench Order No. VFK0824 	For A/C Head adj.	Molytone Grease Order No. M0R265 	For moving parts of mechanism

SERVICE MEASUREMENT EQUIPMENTS

To achieve the movie camera servicing, following adjustment equipments should be required.
(For more detail, please refer to each models Service Manual.)

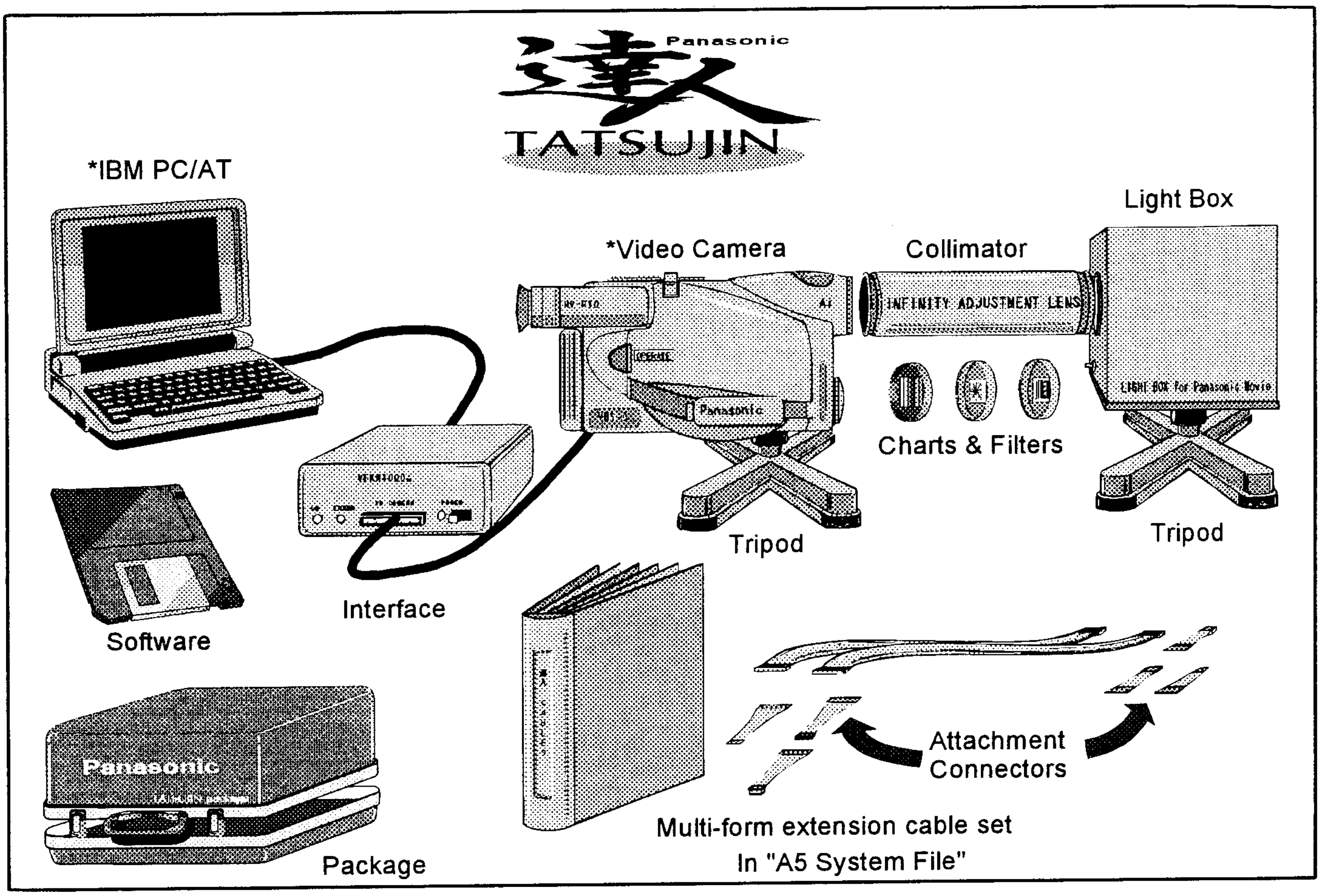
① **VECTOR SCOPE**	② **OSCILLOSCOPE**	③ **DIGITAL MULTIMETER**
	 CH1,CH2 5mV/div DC~100MHz 2mV/div DC~50MHz 1mV/div DC~25MHz CH1 SIG OUT DC~10MHz CH3 EXT DC~70MHz	 AC: 200mV~500V (5 Range) DC: 200mV~1000V (5 Range) Resistor: 200Ω~20MΩ (6 Range) AC Curent: 200mA,1A (2 Range) DC Curent: 200mA,1A (2 Range)
④ **FREQUENCY COUNTER**	⑤ **COLOUR MONITOR** (Colour TV)	⑩ **COLOUR TEMPERATURE CONVERSION FILTER** (order NO. : VFK0713(C12)) (order NO. : VFK0716(C2))
 CH-A 25mVrms DC~10MHz CH-B 25mVrms DC~100MHz	⑥ **TRIPOD**	
	⑦ **LIGHT BOX** (order NO. :VRD93MLB)	⑪ **EVR FIXTURE** (order NO. : VFK0644)
	⑧ **GRAY SCALE CHART** (order NO. : VFK0871S)	⑫ **COMMUNICATING CABELS** (order NO. : VFK0766A(5P)) (order NO. : VFK0734W(24P))
	⑨ **HUNTING CHART** (order NO. : VFK0546)	⑬ **ROM FOR EVR FIXTURE** (order NO. : VFK0701ROM * *)

STANDARD SETTING-UP


③ Digital Multimeter
&
④ Frequency Counter
② Oscilloscope
⑤ Colour Monitor
⑩ Colour Temperature
Conversion Filter
AC Adaptor
⑦ Light Box
Movie Camera
⑧ Gray Scale Chart
&
⑨ Hunting Chart
⑥ Tripod
① Vectorscope
Service Manual

NEW SERVICE DEVICE KIT "TATSUJIN"

Order NO.: VED95TTJ


Panasonic
TATSUJIN
*IBM PC/AT
Light Box
*Video Camera
Collimator
INFINITY ADJUSTMENT LENS
LIGHT BOX for Panasonic Movie
Charts & Filters
Tripod
Tripod
Software
Interface
Attachment
Connectors
Package
Multi-form extension cable set
In "A5 System File"

A new service device kit for Video Camera, "TATSUJIN" kit, is now available from Panasonic. "TATSUJIN" is a Japanese word witch means a specialist, expert, or master in English. This naming was made because the kit will make you a "TATSUJIN" of Panasonic Video Camera servicing. The "TATSUJIN" kit consists of the following 3 items which are simply organized in a small package. All of which will drastically improve your productivity of Video Camera servicing in terms of Diagnosis, Adjustment, and Confirmation.

1. PC-EVR. (Interface, Software, Connecting Cables)
   It connects a Camera to your IBM PC/AT so that the adjustment and trouble-shooting can be done easily on PC screen. The time used to taken by the camera adjustment will be reduced more than 60%. In addition, its diagnosis support function helps you to improve the service efficiency drastically. The conventional EVR (VFK0644) will be replaced by this new computer-aided system.

2. Optical Set. (Collimator, Charts & Filters, Light Box, Tripods)
   All of the optical devices which are indispensable to service a camera but used to take a huge space to set up, are now drastically shrunk into a compact "Desk-top space". Now you can easily aim various charts, COLOUR-BAR, GRAY-SCALE, HUNTING, and WHITE, by simply attaching them to the collimator which is inserted in a compact light box. So that you do not have to worry about restricting external light and measuring the distance from the chart.

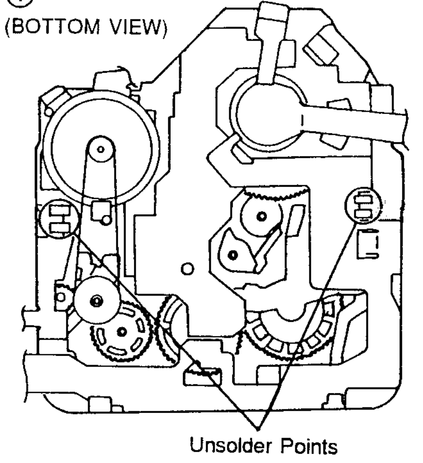
3. Multi-form Extension Cable Set.
   Now you can make any kind of extension cable required, by simply changing the attachment connectors. All of the connectors which cover all extension cables since 1990, are simply organized in a "A5 System File". When you need a new connector for a new model, it can be purchased at extremely low price.

Note: *PC and *Camera are not included in the kit.The minimum requirement of the PC is 80286 CPU,1MB RAM, and MS-DOS 3.2. For further information, please contact Video Equipment Division.

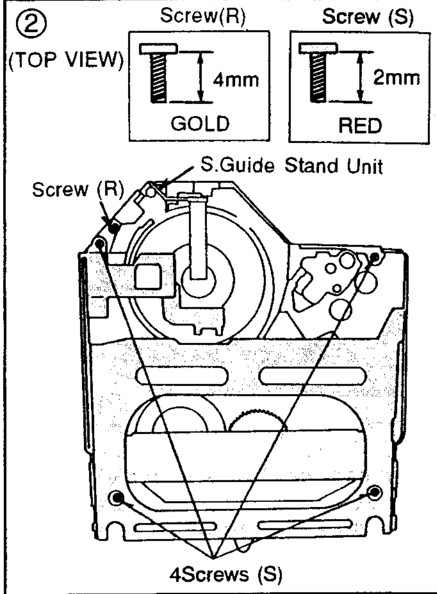
3 DISASSEMBLY PROCEDURES OF MECHANISM

No.	Items	Fig.	R:Removal / S:Unsolder	
1	Cassette Holder U.	①	S	2 Flex. Connectors
		②	R	4 Red Screws(2mm)
		③	–	Release Eject Lock Lever
2	S.Guide Stand U.	②	R	1 Gold Screw (4mm)
3	DD Cylinder U.	④	R	RT Connector
			R	3 Silver Screws(4mm)
4	Supply Rail U.	⑤	–	Make loading half way with a 1.5V battery.
		⑥	R	2 Gold Screws(2mm)
5	Loading Motor U.	⑦	R	2 Silver Screws(3mm) *Slightly move loading posts with a battery.
6	Tension Regulator U.	⑦	–	Unhook Tension Spring.
			R	1 Cut Washer
7	Supply Reel Table	⑧	R	1 Cut Washer
8	Eject Lever U.	⑧	R	3 Cut Washers
		⑨	R	2 Screws on Eject Lock Base.
9	Pinch Drive Arm	⑩	R	1 Ring Washer 1 Cut Washer
10	Pad Arm	⑪	R	1 Cut Washer
11	Take-up Rail U.	⑫	R	2 Gold Screws(4mm)
			S	Sensor LED (bottom)
12	Swing Arm U.	⑬	R	1 Gold Screw(2mm)
			R	1 Silver Screw(3mm)
			R	1 Ring Washer
13	Mode SW	⑭	R	1 Gold Screw(2mm)
			R	1 Cut Washer
14	Loading U.	⑭	R	5 Gold Screws(2mm)

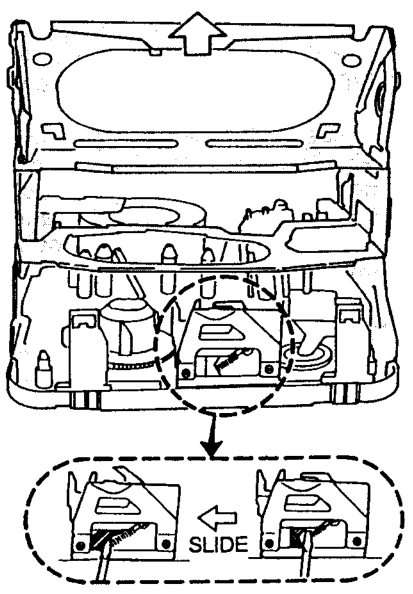
①


(BOTTOM VIEW)
Unsolder Points

②


(TOP VIEW)
Screw(R)
4mm
GOLD
Screw (S)
2mm
RED
S.Guide Stand Unit
Screw (R)
4Screws (S)

③



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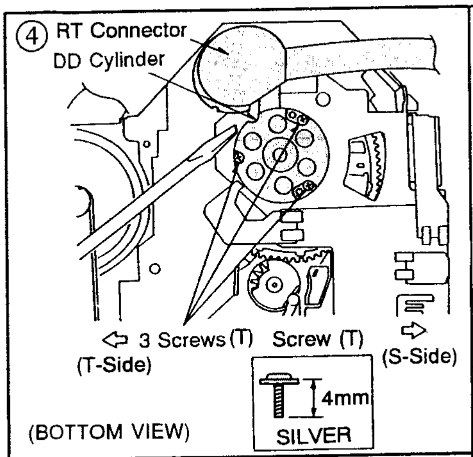
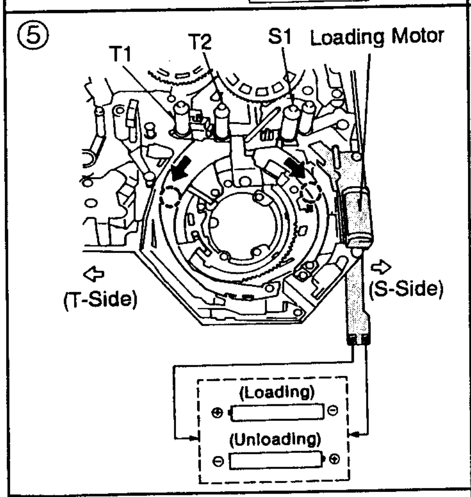
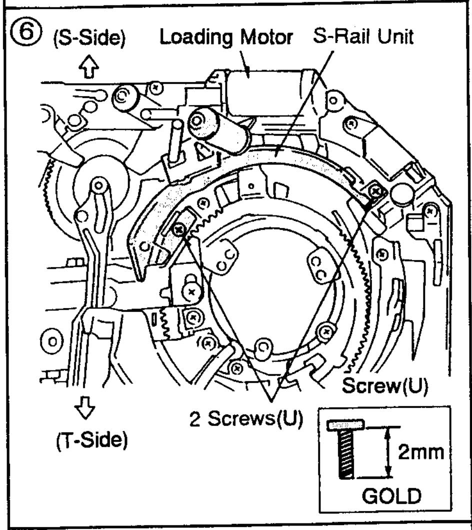

RT Connector
DD Cylinder
3 Screws (T)
Screw (T)
(T-Side)
(S-Side)
4mm
SILVER
(BOTTOM VIEW)

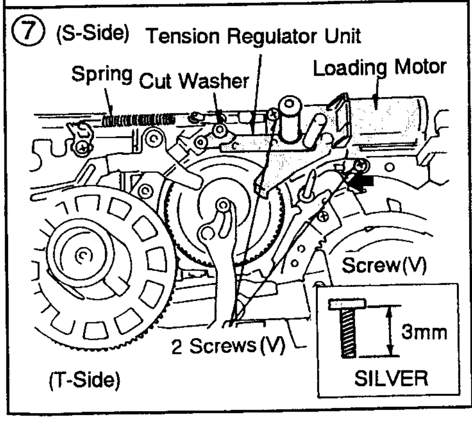
⑤


T1
T2
S1
Loading Motor
(T-Side)
(S-Side)
(Loading)
(Unloading)

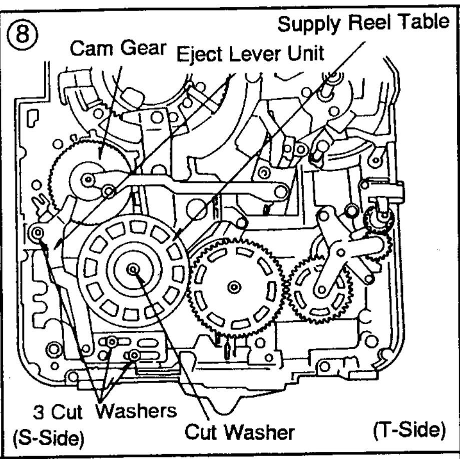
⑥


(S-Side)
Loading Motor
S-Rail Unit
(T-Side)
2 Screws(U)
Screw(U)
2mm
GOLD

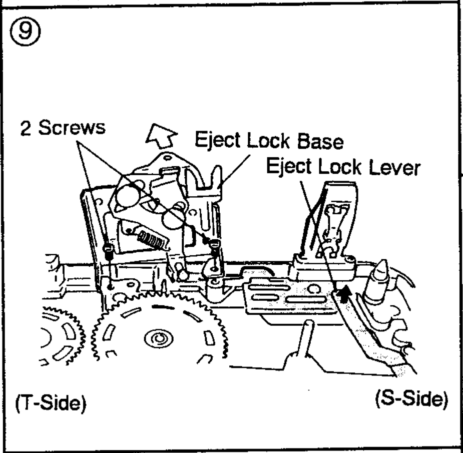
⑦


(S-Side)
Tension Regulator Unit
Spring
Cut Washer
Loading Motor
Screw(V)
2 Screws(V)
(T-Side)
3mm
SILVER

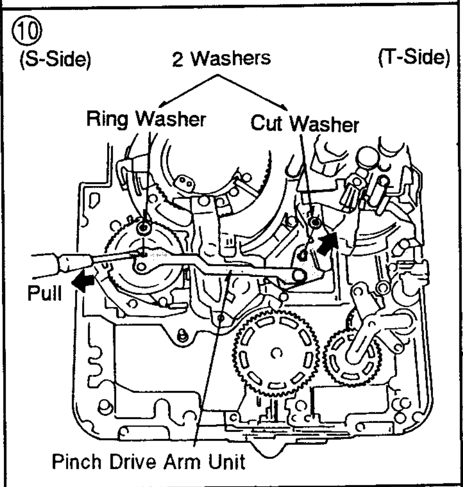
⑧


Supply Reel Table
Cam Gear
Eject Lever Unit
3 Cut Washers
(S-Side)
Cut Washer
(T-Side)

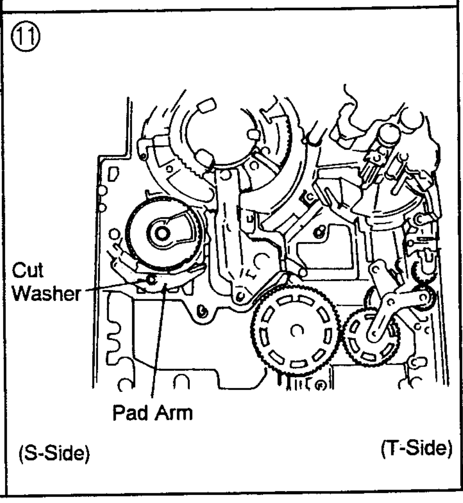
⑨


2 Screws
Eject Lock Base
Eject Lock Lever
(T-Side)
(S-Side)

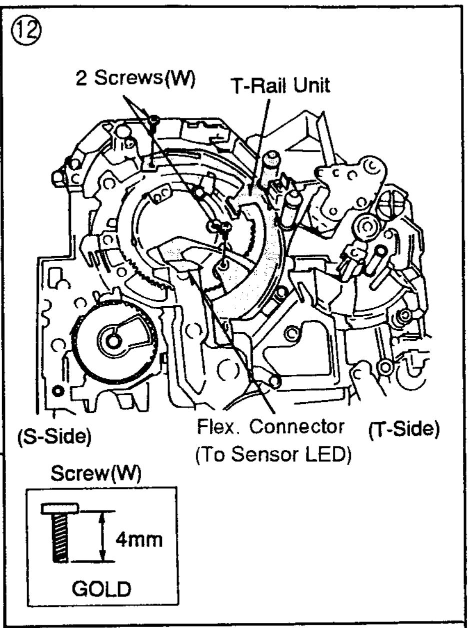
⑩


(S-Side)
2 Washers
(T-Side)
Ring Washer
Cut Washer
Pull
Pinch Drive Arm Unit

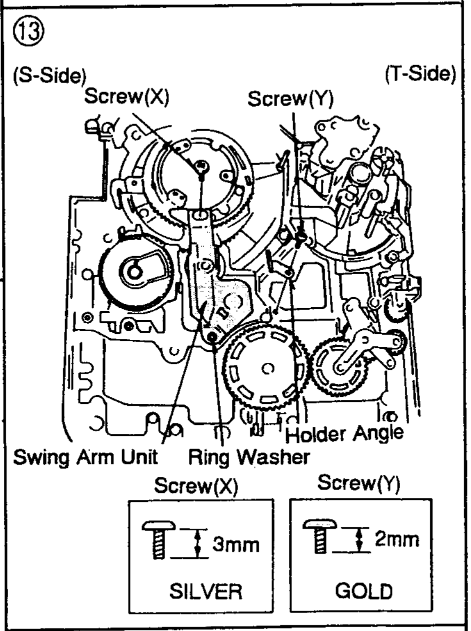
⑪


Cut Washer
Pad Arm
(S-Side)
(T-Side)

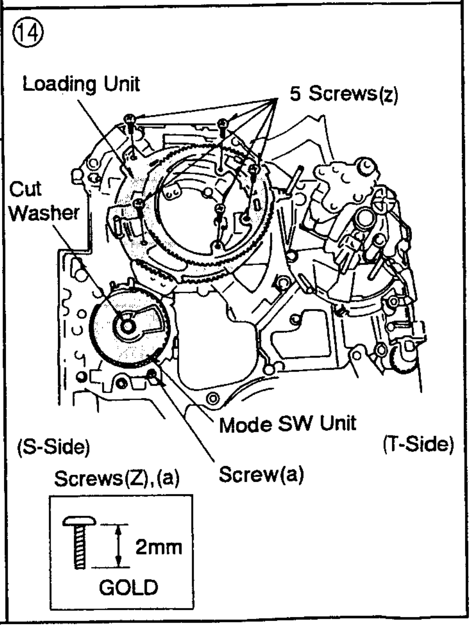
⑫


2 Screws(W)
T-Rail Unit
(S-Side)
Flex. Connector (To Sensor LED)
(T-Side)
Screw(W)
4mm
GOLD

⑬


(S-Side)
(T-Side)
Screw(X)
Screw(Y)
Holder Angle
Swing Arm Unit
Ring Washer
Screw(X)
3mm
SILVER
Screw(Y)
2mm
GOLD

⑭

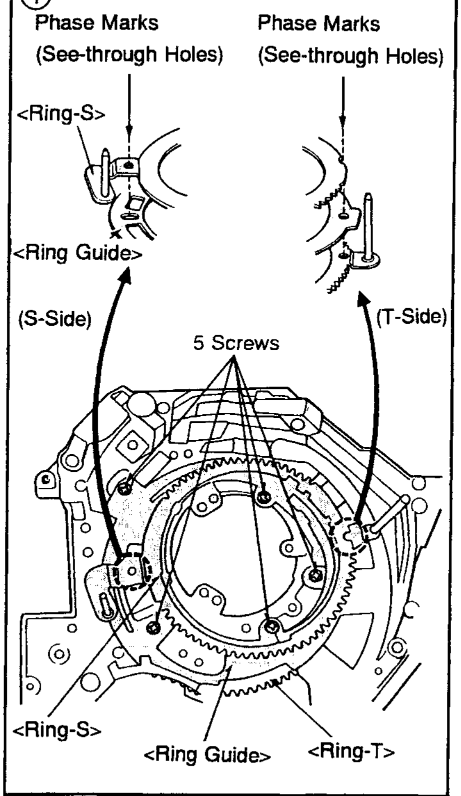

Loading Unit
5 Screws(z)
Cut Washer
Mode SW Unit
(S-Side)
(T-Side)
Screws(Z),(a)
Screw(a)
2mm
GOLD

4 ASSEMBLY AND PHASE ADJUSTMENT PROCEDURES OF MECHANISM

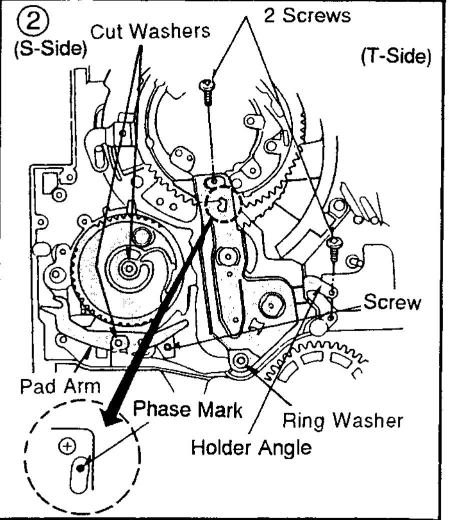
ASSEMBLY & PHASE ADJUSTMENT PROCEDURES

No.	Items	Fig.	A:Assembly / P:Phase Adj. / S: Solder	
1	Loading U.	①	A	5 Gold Screws(2mm)
			P	2 See - through Holes
2	Cam Gear (Mode SW)	②	P	See Page 4. (Fig.5)
			A	1 Cut Washer
			A	1 Gold Screw(2mm)
3	Pad Arm	②	A	1 Cut Washer
4	Swing Arm U.	②③	P	See fig.②,③
		②	A	1 Gold Screw(2mm) with Holder Angle 1 Silver Screw(3mm)
			A	1 Ring Washer
5	Loading Motor U.	④⑤	A	2 Silver Screws(3mm) *Slightly move loading posts with a battery.
6	Pinch Drive Arm	⑥⑦	A	1 Ring & 1 Cut Washers
7	Supply Rail U.	⑧	A	2 Gold Screws(2mm)
8	Take-up Rail U.	⑨	A	2 Gold Screws(4mm)
			S	Sensor LED (bottom)
9	Eject Lever U.	⑩	A	3 Cut Washers
			A	2 Screws on Eject Lock Base.
10	Tension Regulator U.	⑪	A	1 Cut Washer
			–	Hook Tension Spring
11	S. Reel Table	⑫	A	1 Cut Washer
12	DD Cylinder U.	⑬	A	3 Silver Screws(4mm)
13	RT Connector	⑭	P	See fig.⑭
			A	*No Screw
14	S.Guide Stand U.	⑮	A	1 Gold Screw (4mm)
15	Cassette Holder U.	⑮	A	4 Red Screws(2mm)
			S	2 Flex. Connectors

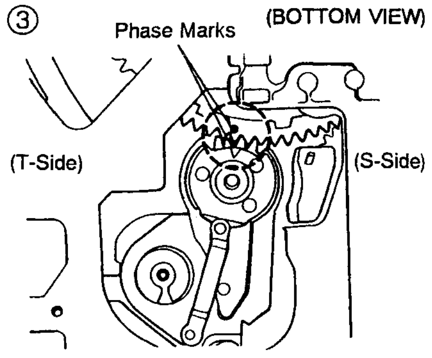
①


Phase Marks (See-through Holes)
Phase Marks (See-through Holes)
<Ring-S>
<Ring Guide>
(S-Side)
(T-Side)
5 Screws
<Ring-S>
<Ring Guide>
<Ring-T>

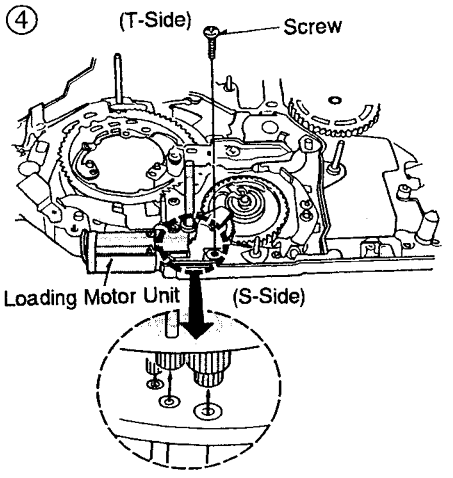
②


(S-Side)
Cut Washers
2 Screws
(T-Side)
Screw
Pad Arm
Phase Mark
Ring Washer
Holder Angle

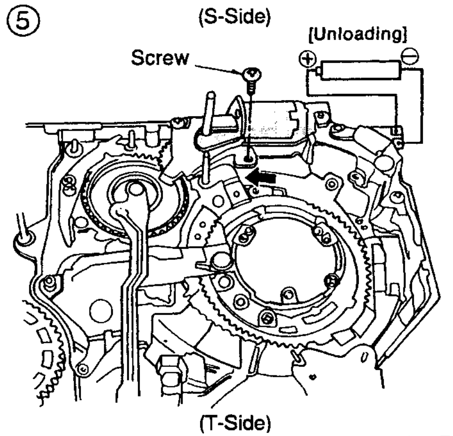
③


Phase Marks
(BOTTOM VIEW)
(T-Side)
(S-Side)

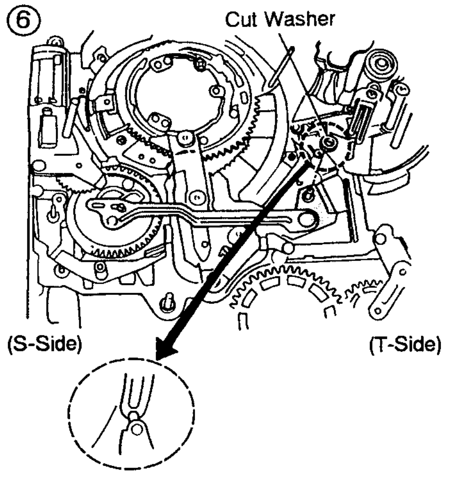
④


(T-Side)
Screw
Loading Motor Unit
(S-Side)

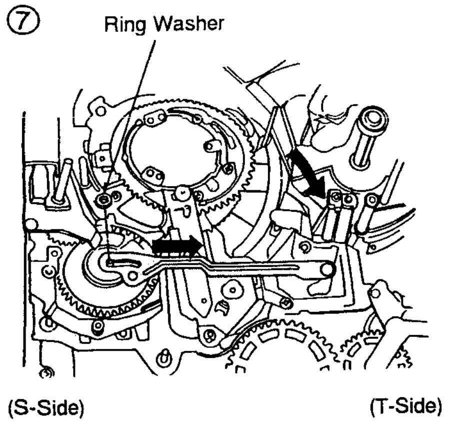
⑤


(S-Side)
[Unloading]
Screw
⊕
⊖
(T-Side)

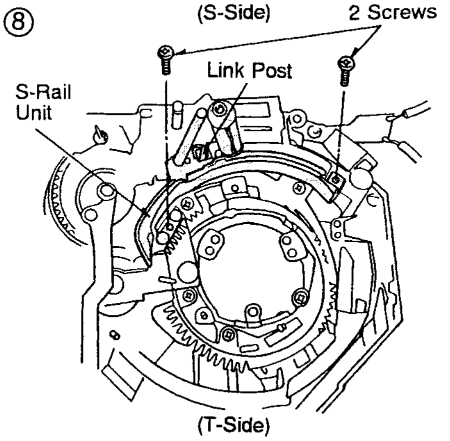
⑥


Cut Washer
(S-Side)
(T-Side)

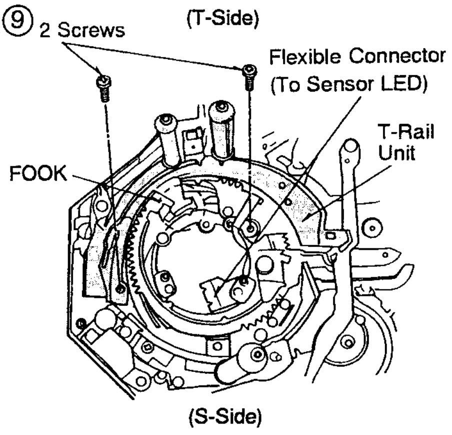
⑦


Ring Washer
(S-Side)
(T-Side)

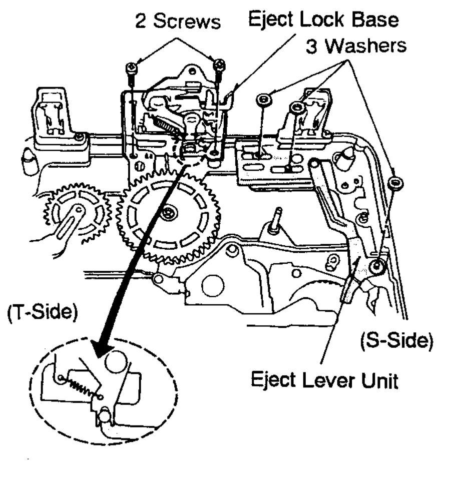
⑧


(S-Side)
2 Screws
Link Post
S-Rail Unit
(T-Side)

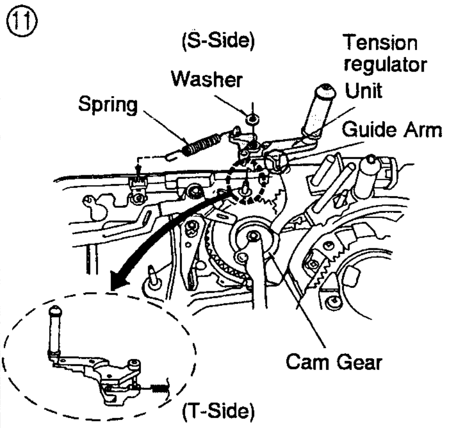
⑨


2 Screws
(T-Side)
Flexible Connector
(To Sensor LED)
T-Rail Unit
FOOK
(S-Side)

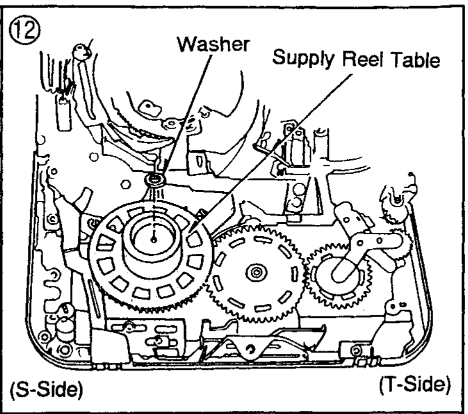
⑩


2 Screws
Eject Lock Base
3 Washers
(T-Side)
(S-Side)
Eject Lever Unit

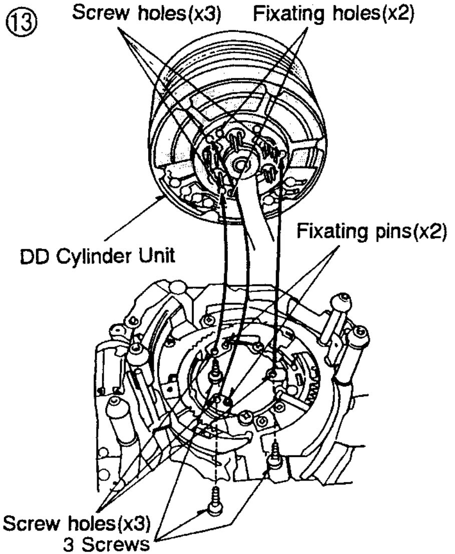
⑪


(S-Side)
Tension regulator Unit
Washer
Spring
Guide Arm
Cam Gear
(T-Side)

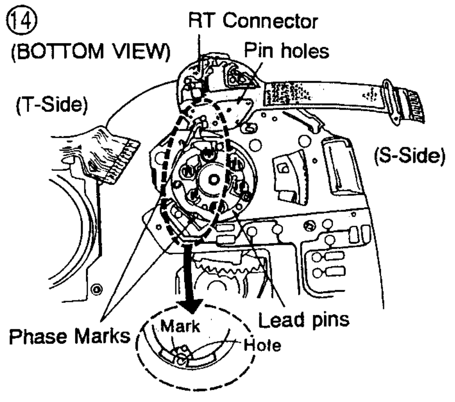
⑫


Washer
Supply Reel Table
(S-Side)
(T-Side)

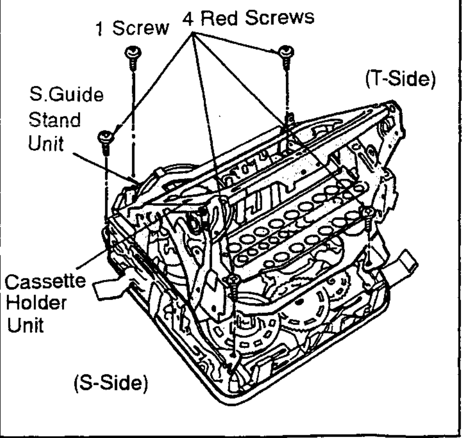
⑬


Screw holes(x3)
Fixating holes(x2)
DD Cylinder Unit
Fixating pins(x2)
Screw holes(x3)
3 Screws

⑭


RT Connector
(BOTTOM VIEW)
Pin holes
(T-Side)
(S-Side)
Phase Marks
Mark
Lead pins
Hole

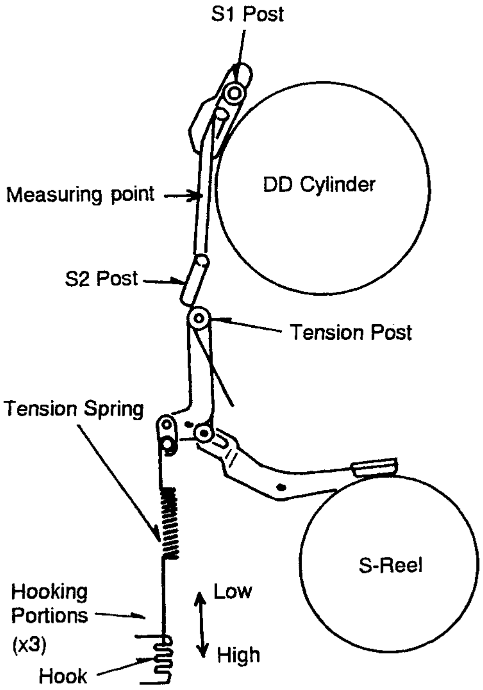
⑮


1 Screw
4 Red Screws
(T-Side)
S.Guide Stand Unit
Cassette Holder Unit
(S-Side)

5 INTERCHANGEABILITY ADJUSTMENT

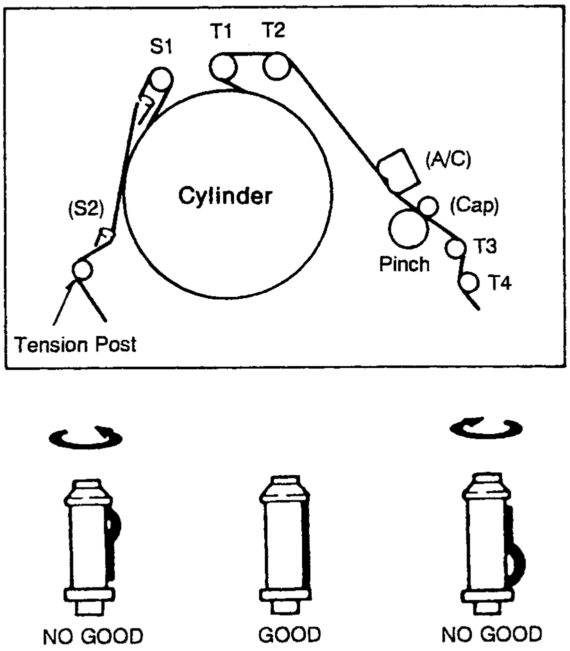
No.	Items	Fig.	Adjustment Procedures	
1	Back Tension	①	Equipments	1. Tension Meter (VFK0132) 2. VHS-C Cassette Tape
			Specification	16.5g-21.0g
			1. Play back a tape. 2. Set Tension Meter at the measuring point, and read the value. 3. If the value is out of specification, change the hooking position of Tension Spring.	
2	Height of Tape Guide Posts (Preliminary Adjustment)	② ④	Equipments	1. Hex Wrench 2. VHS-C Cassette Tape
			Specification	No tape curling
			1. Play back a tape. 2. Confirm the tape travel at upper and lower guides on posts S1, T1, T2 and T3. 3. If curling is apparent, adjust the height of posts by turning the top of post with Hex Wrench.	
3	Height of A/C Head (Preliminary Adjustment)	③ ④	Equipments	1. Box Wrench 2. VHS-C Cassette Tape
			Specification	See Fig. ③
			1. Play back a tape. 2. Confirm that the tape runs 0.25mm above the lower edge of Control Head. 3. If does not correct, turn Height Adjustment Nut in either direction as necessary to correct it.	
4	Tape Interchangeability		Equipments	1. Dual Trace Oscilloscope 2. Alignment Tape 3. H-Position Adjustment Driver 4. Asterisk Wrench
		⑤ ⑥ ⑨	Specification	Azimuth :Maximum Audio Output H-Position :Maximum RF Output RF Envelope :No Lack of RF Output
			Preparation: 1. Press Tracking Up / Down buttons at the same time to set the tracking control in the center of the variable range. 2. Play back the monoscope portion (6KHz, MONO) of the Alignment Tape.	
		④ ⑤	Adjustments: Azimuth Adjustment for A/C Head 1. Connect the oscilloscope to Audio Line Output. 2. Adjust Azimuth Adjustment Screw so that the audio output level is at the maximum.	
		⑤ ⑥	Horizontal Position Adjustment for A/C Head 1. Connect the oscilloscope to RF Output terminal (e.g.: TP8001). 2. Adjust the horizontal position by turning H-Position Adjustment Nut so that the RF envelope is at the maximum.	
		② ⑦	Height Adjustment for Tape Guide Posts 1. When the RF envelope is lacked at the beginning of the track, adjust the height of S1 post.	
		② ⑧	2. When the RF envelope is lacked at the end of the track, adjust the height of T1 post.	

①



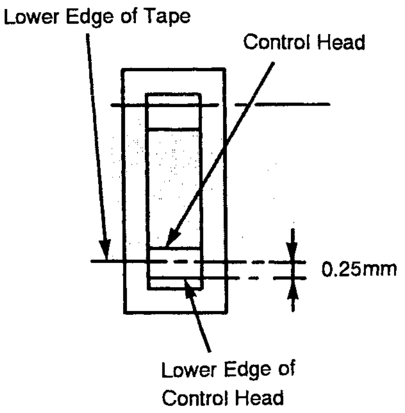
S1 Post
DD Cylinder
Measuring point
S2 Post
Tension Post
Tension Spring
S-Reel
Hooking Portions (x3)
Hook
Low
High

②



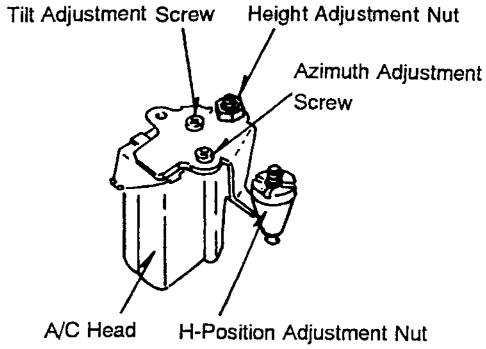
S1
T1
T2
(A/C)
Cylinder
(S2)
(Cap)
T3
Pinch
T4
Tension Post
NO GOOD
GOOD
NO GOOD

③



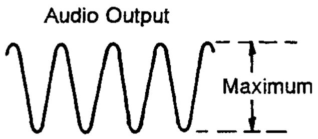
Lower Edge of Tape
Control Head
0.25mm
Lower Edge of Control Head

④



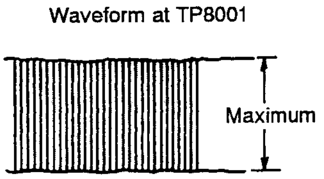
Tilt Adjustment Screw
Height Adjustment Nut
Azimuth Adjustment Screw
A/C Head
H-Position Adjustment Nut

⑤



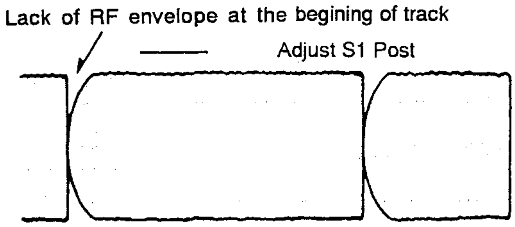
Audio Output
Maximum

⑥



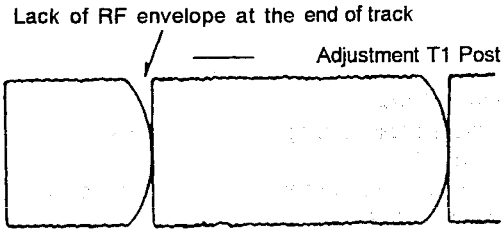
Waveform at TP8001
Maximum

⑦



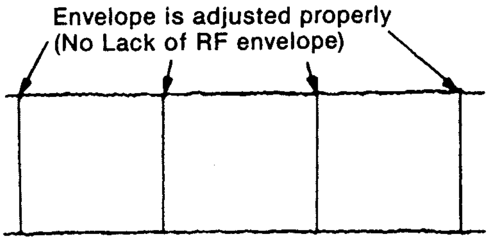
Lack of RF envelope at the begining of track
Adjust S1 Post

⑧



Lack of RF envelope at the end of track
Adjustment T1 Post

⑨



Envelope is adjusted properly
(No Lack of RF envelope)

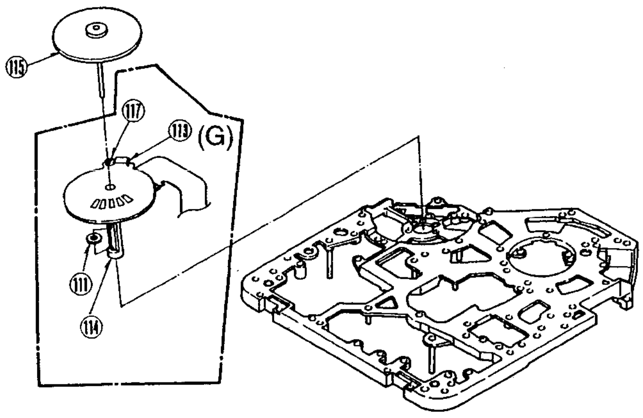
6 SERVICE HINTS

FAULT FINDING CHART FOR DL MECHANISM

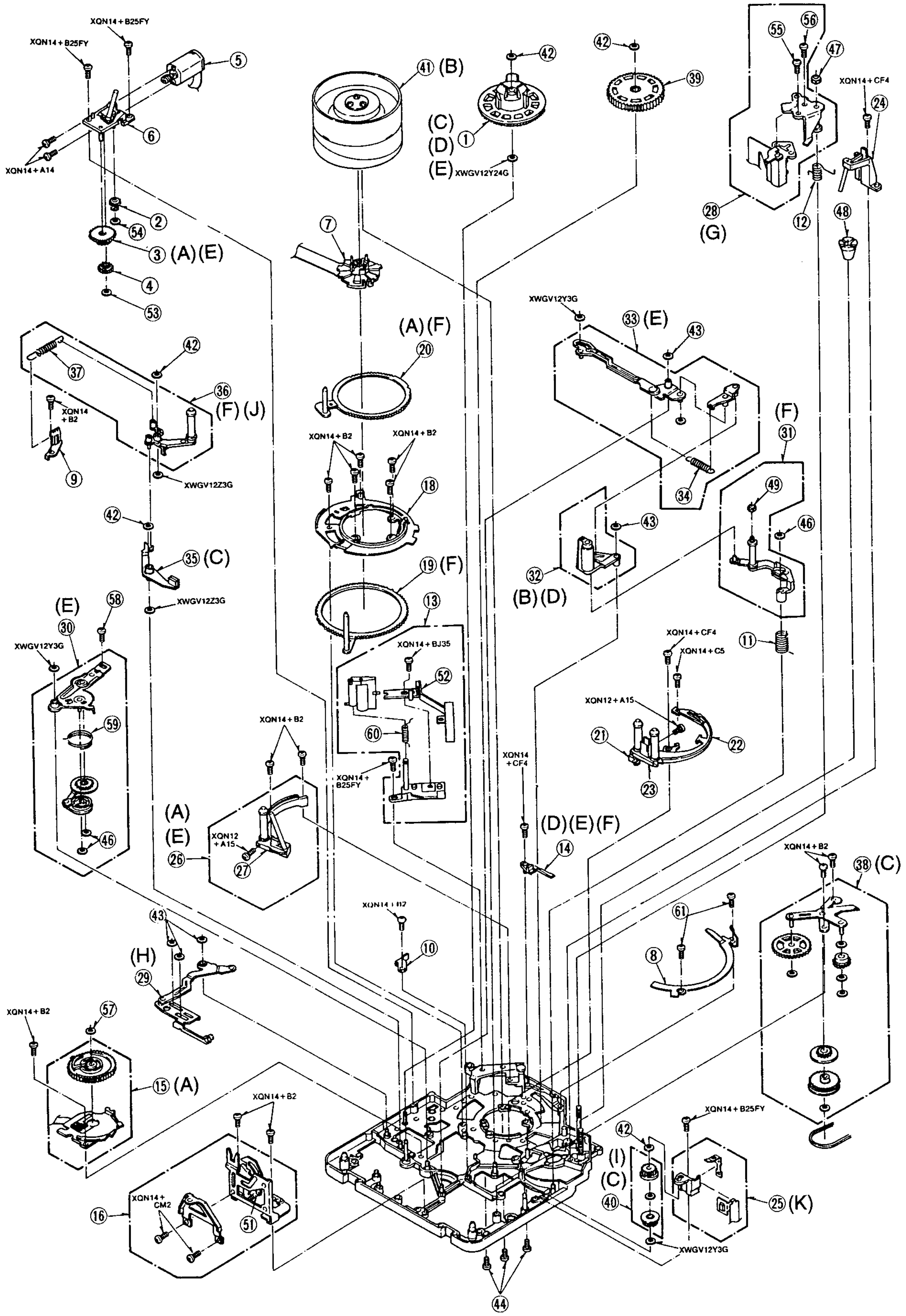
REF.	SYMPTOMS	PARTS TO BE CHECKED		
		PARTS NAME	PARTS NO.	REF. NO.
(A)	No Mechanical Operation	BRAKE GEAR (B)	VDG0822	③
		MODE SWITCH (CAM GEAR)	VSR0096	⑮
		S-RAIL UNIT	※1 VXA5153 (VXA4532)	㉖
		S-RING UNIT	VXA4519	⑳
(B)	Power Cut Off	PINCH ARM UNIT	VXL2139	㉜
		CYLINDER UNIT	※2 NOTE	㊶
(C)	Tape Slack	REEL BASE (S)	VDR0226	①
		PAD ARM UNIT	VXL2144	㉟
		T-DRIVE GEAR UNIT	VXP1313	㊵
		IDLER UNIT	※1 VXL2399 (VXL2147)	㊳
(D)	Tape Jam	PINCH ARM UNIT	VXL2139	㉜
		REEL BASE (S)	VDR0226	①
		T-BOAT GUIDE	VMD1851	⑭
(E)	Faulty Loading	PINCH DRIVE ARM UNIT	VXL2140	㉝
		S-RAIL UNIT	※1 VXA5153 (VXA4532)	㉖
		REEL BASE (S)	VDR0226	①
		BRAKE GEAR (B)	VDG0822	③
		SWING ARM UNIT	※1 VXL2401 (VXL2133)	㉚
		T-BOAT GUIDE	VMD1851	⑭
(F)	Noisy Playback Picture	T-BOAT GUIDE	VMD1851	⑭
		TENSION REGULATOR ARM UNIT	VXL2145	㊱
		T-RING UNIT	VXA4518	⑲
		S-RING UNIT	VXA4519	⑳
		T3 ARM UNIT	VXL2415	㉛
(G)	Periodic Noise on Playback Picture	AC HEAD UNIT	※1 VXA5201 (VXA4998)	㉘
		MR HEAD	VBK0059	(113)
(H)	No Eject Operation	EJECT LEVER (1) UNIT	※1 VXL2393 (VXL2130)	㉙
		MECHANICAL PHASE ADJUSTMENT		
(I)	Audio Wow	T-DRIVE GEAR UNIT	VXP1313	㊵
(J)	Scratch on Tape	TENSION REGULATOR ARM UNIT	VXL2145	㊱
(K)	Stop after few Sec. Play	T-REEL SENSOR UNIT	VXA4997	㉕

※1 **NOTE:** Some of the parts have 2 kinds of part number. Basically, part number in the bracket "( )" is an old (early) type. For more detail, please refer to each Service Manual.

※2 **NOTE:** Confirm the part number with the Service Manual model by model.



VTR MECHANISM SECTION


XQN14+B25FY
XQN14+B25FY
⑤
⑥
XQN14+A14
②
(54)
③ (A)(E)
④
(53)
㊶ (B)
㊷
(C)
(D) ①
(E) XWGV12Y24G
㊷
㊴
⑦
(55)
(56)
㊼
XQN14+CF4
㉔
㉘
(G)
⑫
㊽
(A)(F)
⑳
XQN14+B2
XQN14+B2
⑱
⑲ (F)
⑬
XQN14+BJ35
(52)
(60)
XQN14+B25FY
㊲
㊷
㊱ (F)(J)
XQN14+B2
⑨
XWGV12Z3G
㊷
㉟ (C)
XWGV12Z3G
(E)
(58)
㉚
XWGV12Y3G
(59)
㊻
XWGV12Y3G
㉝ (E)
㊸
(F)
㉛
㊾
㊻
㉞
㊸
㉜ (B)(D)
⑪
XQN14+CF4
XQN14+C5
XQN12+A15
㉑
㉒
㉓
XQN14+B2
(A)
(E)
㉖
XQN12+A15
㉗
XQN14+CF4
(D)(E)(F)
⑭
XQN14+B2
⑩
XQN14+B2
㊳ (C)
(61)
⑧
㊸
(H)
㉙
XQN14+B2
(57)
⑮ (A)
XQN14+B2
XQN14+CM2
⑯
(51)
㊷
(I)
(C)
㊵
XQN14+B25FY
㉕ (K)
XWGV12Y3G
㊹

Note: Symbols (A)-(K) beside the reference number of each parts show the symptom concerned with the parts (Refer to page 14).

MEMO

Order no. VMD9708028S0

Service Manual

Supplement

Video Product

Effective from : First Production

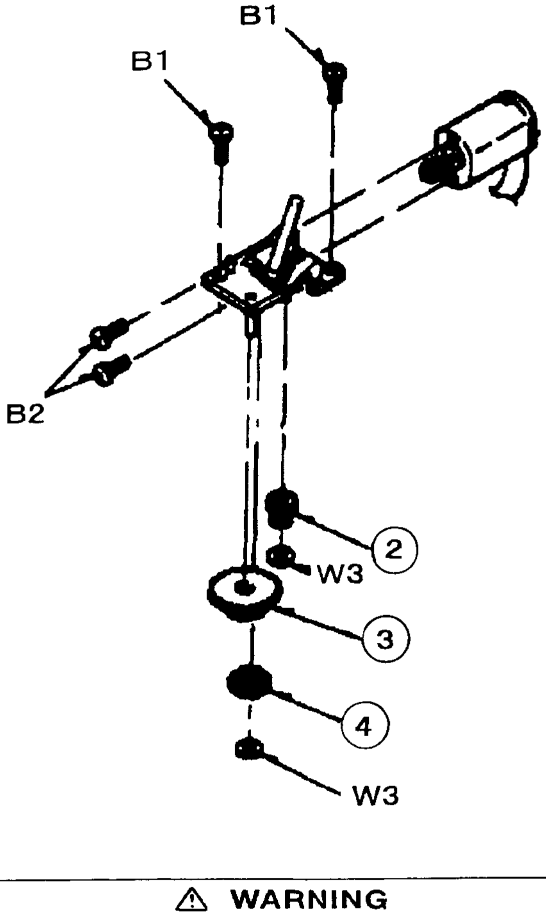
Model No. DL Mechanism's
Movie Camera

Subject : Correction of Parts List

Please use this service manual together with the service manual for DL Mechanism's Movie Camera.

Please correct parts list as follows.

Ref. No.	Part No.	Part name	Pcs
2 (1)	VDG0821	BRAKE GEAR (A)	1
3 (1)	VDG0823	BRAKE GEAR (C)	1
4 (1)	VDG0822	BRAKE GEAR (B)	1



⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

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